UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/875,564	05/04/2021	10996417	02316.2584US22/ADC003176	6390

142510 7590 04/14/2021

M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

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):

Scott C. Kowalczyk, Savage, MN;
CommScope Technologies LLC, Hickory, NC;
Jonathan Walter Coan, Savage, MN;
Jonathan R. Kaml, Shakopee, MN;

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Kowalczyk et al.	Examiner:	Doan, Jennifer
Application No.:	15/875,564	Group Art Unit:	2874
Filed:	January 19, 2018	Docket No.:	02316.2584US22/ADC003176
Title:	Fiber Optic Enclosure with Internal Cable Spool and Movable Cover (as amended)		

Filed via EFS-Web

COMMENTS ON THE EXAMINER'S REASONS FOR ALLOWANCE

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Applicant thanks the Examiner for allowing the claims and acknowledges the Examiner's Reasons for Allowance provided in the Notice of Allowance mailed March 22, 2021.

Entry of the Statement into the record should not be construed as any agreement with or acquiescence in the reasoning stated by the Examiner. Applicant points out the reasons for allowance set forth by the Examiner are not the only reasons the claims are allowable. Each of the claims stands on its own merits and is patentable because of the recited combination of elements and not because of the presence or absence of any one particular element.

Respectfully submitted,

142510
PATENT TRADEMARK OFFICE

MERCHANT & GOULD P. C
P. O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: __March 31, 2021_____

By_/Julie K. Skoge/_____
Julie K. Skoge
Reg. No. 63,431
JKS:rlk

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)

142510 7590 03/22/2021
M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

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.

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.

Rebecca Krueger	(Typed or printed name)
/Rebecca Krueger/	(Signature)
March 31, 2021	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

TITLE OF INVENTION: FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	06/22/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
DOAN, JENNIFER	2883	385-135000

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,
(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.

1 Merchant & Gould P.C.
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: CommScope Technologies LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Hickory, NC

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. 132725

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 /Julie K. Skoge/ Date March 31, 2021

Typed or printed name Julie K. Skoge Registration No. 63,431

Electronic Patent Application Fee Transmittal

Application Number:	15875564
Filing Date:	19-Jan-2018
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Filer:	Julie Katherine Skoge/Rebecca Krueger
Attorney Docket Number:	02316.2584US22/ADC003176

Filed as Large 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	1501	1	1200	1200

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1200**

Electronic Acknowledgement Receipt

EFS ID:	42330666
Application Number:	15875564
International Application Number:	
Confirmation Number:	6390
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Customer Number:	142510
Filer:	Julie Katherine Skoge/Rebecca Krueger
Filer Authorized By:	Julie Katherine Skoge
Attorney Docket Number:	02316.2584US22/ADC003176
Receipt Date:	31-MAR-2021
Filing Date:	19-JAN-2018
Time Stamp:	12:02:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1200
RAM confirmation Number	E20213UC02593296
Deposit Account	132725
Authorized User	Rebecca Krueger

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

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Post Allowance Communication - Incoming	2021-03-31-Comments-Reasons-Allowance.PDF	79125 9f93c6ea7cad3444382581163b6a9d638f36ff36	no	1
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	2021-03-31-Issue-Fee.PDF	122231 05aaa65b2c52c817c922f8d770ba6d0f01e45f2b	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30872 5be8565295fbad59a9dfd6387c9f77bd46f83a95	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	232228		

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.

New Applications Under 35 U.S.C. 111

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.

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

142510 7590 03/22/2021

M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

EXAMINER
DOAN, JENNIFER

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 03/22/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

TITLE OF INVENTION: FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	06/22/2021

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE 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.

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.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

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.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

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)

142510 7590 03/22/2021
M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

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.

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.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

TITLE OF INVENTION: FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	06/22/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
DOAN, JENNIFER	2883	385-135000

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,
(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.

1 _____
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)

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. _____

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 _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

142510 7590 03/22/2021

M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

EXAMINER	
DOAN, JENNIFER	

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 03/22/2021

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. 15/875,564	Applicant(s) Kowalczyk et al.	
	Examiner JENNIFER DOAN	Art Unit 2883	AIA (FITF) Status No

-- 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 a Request for Continued Examination filed on 03/03/21.
   ☐ 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 1-38 . 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 _____.

/JENNIFER DOAN/
Primary Examiner, Art Unit 2883

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 03/03/21 has been acknowledged and entered. Claims 1-38 are pending in the application.

Specification

3. Applicants' cooperation is requested in correcting any errors of which applicants may become aware in the specification.

Reasons for Allowance

4. Claims 1-38 are allowed.

5. The following is an examiner's statement of reasons for allowance:

The prior art of record fails to disclose or reasonably suggest all the limitations of claim 1. Specifically, the prior art fails to disclose a fiber optic enclosure comprising a wall mountable enclosure arrangement including a base, sidewalls that project forwardly from the base, and a cover, front portions of the sidewalls defining a front access opening, the cover being pivotal

relative to the base about a pivot axis between an open position providing access to the front access opening and a closed position covering the front access opening, the cover contacting the front portions of sidewalls when disposed in the closed position; a spool mountable to the enclosure arrangement and positionable within the enclosure arrangement, the spool defining a spooling portion; a second fiber optic cable spooled about the spooling portion of the spool, the second fiber optic cable including at least one optical fiber; a fiber optic adapter spaced inwardly from the sidewalls, the fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port; the second fiber optic cable being payable from the spool through the second cable opening while the spool is mounted to the enclosure arrangement, wherein the spool rotates relative to the enclosure arrangement about an axis of rotation as the second fiber optic cable is paid out from the spool, and wherein the fiber optic connector rotates in concert with the spool as the second fiber optic cable is paid out from the spool; and wherein access for plugging a connectorized end of the first cable into the second connector port of the fiber optic adapter while the fiber optic adapter is spaced inwardly from the sidewalls is: a) available from the front of the enclosure arrangement when the cover is in the open position; and b) not available from the front of the enclosure arrangement when the cover is in the closed position, in combination with other recited limitations in the claim.

Claims 2-12, 21 and 34-37 depend from claim 1.

The prior art of record fails to disclose or reasonably suggest all the limitations of claim 13. Specifically, the prior art fails to disclose a fiber optic enclosure comprising a housing including a front cover movable between an open position and a closed position, the housing

including sides that extend between the front and the back; a spool mountable within the housing; a fiber optic cable coiled about a spooling portion of the spool, the fiber optic cable including at least one optical fiber; a fiber optic adapter positioned within the housing, the fiber optic adapter including a first connector port receiving the fiber optic connector and also including an opposite second connector port, the front cover preventing the first and second connector ports of the fiber optic adapter from being accessed from the front of the housing when in the closed position, and the front cover allowing the first and second connector ports of the fiber optic adapter to be accessed from the front of the housing when in the open position; the fiber optic cable being payable from the spool while the spool is positioned within the housing, wherein the spool rotates relative to the housing about an axis of rotation as the fiber optic cable is paid out from the spool, and wherein the fiber optic connector and the fiber optic adapter rotate in concert with the spool as the fiber optic cable is paid out from the spool; and a cable routing path for routing a subscriber cable to the second connector port of the fiber optic adapter, the cable routing path extending within the housing from the cable opening to the second connector port of the fiber optic adapter, at least a portion of the cable routing path being located between a rear side of the front cover and a front axial end of the spool when the front cover is in the closed position, in combination with other recited limitations in the claim.

Claims 14-20 depend from claim 13.

The prior art of record fails to disclose or reasonably suggest all the limitations of claim 22. Specifically, the prior art fails to disclose a fiber optic enclosure comprising a wall mountable enclosure arrangement including a base, sidewalls that project forwardly from the

base, and a cover, front portions of the sidewalls defining a front access opening, the cover being pivotal relative to the base about a pivot axis between a closed position covering the front access opening and an open position providing access to the front access opening, the cover contacting the front portions sidewalls when disposed in the closed position; a cable spool mounted to the enclosure arrangement so that the cable spool is rotatable relative to the enclosure arrangement about a rotation axis that is transverse to the pivot axis; a fiber optic cable spooled about the spooling portion of the cable spool; a fiber optic connector terminating the at least one optical fiber of the fiber optic cable, the fiber optic connector rotating in unison with the cable spool when the cable spool rotates about the rotation axis; and a fiber optic adapter mounted to the enclosure arrangement, the fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port; the cover extending across the fiber optic adapter when disposed in the closed position, in combination with other recited limitations in the claim.

Claims 23-33 and 38 depend from claim 22.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Doan whose telephone number is (571) 272-2346. The examiner can normally be reached on Monday to Friday from 7:00am to 3:30pm.

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 571-270-17391739. 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 http://pair-direct.uspto.gov. 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.

/JENNIFER DOAN/
Primary Examiner, Art Unit 2883

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	JENNIFER DOAN	2883

CPC - Searched*		
Symbol	Date	Examiner
G02B6/4457 or G02B6/3897 or G02B6/4452; G02B6/4454; G02B6/46; G02B6/4446; G02B6/4471; G02B6/445; G02B6/00	01/28/2021	JD
G02B6/4457 or G02B6/3897 or G02B6/4452; G02B6/4454; G02B6/46; G02B6/4446; G02B6/4471; G02B6/445; G02B6/00	03/10/2021	JD

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* 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
East search (text search - see search history printout)	01/30/2021	JD
Checked the related applications	01/30/2021	JD
Non-Patent Literature search	01/29/2021	JD
East search updated (text search - see search history printout)	03/12/2021	JD
Non-Patent Literature updated search	03/11/2021	JD

IPR2025-01119
Belden EX1005

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	JENNIFER DOAN	2883

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
US-PGPUB & USPAT text search (see interference search printout)		01/30/2021	JD
US-PGPUB & USPAT text search (see interference search printout)		03/12/2021	JD

IPR2025-01119
Belden EX1005

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	**Art Unit**
	JENNIFER DOAN	2883

CPC						
Symbol					**Type**	**Version**
G02B	/	6	/	4457	F	2013-01-01
G02B	/	6	/	445	I	2013-01-01
G02B	/	6	/	4441	I	2013-01-01
G02B	/	6	/	4446	I	2013-01-01
G02B	/	6	/	4471	I	2013-01-01
G02B	/	6	/	3897	I	2013-01-01
G02B	/	6	/	4452	I	2013-01-01
G02B	/	6	/	4453	I	2013-01-01
G02B	/	6	/	4454	I	2013-01-01
G02B	/	6	/	46	I	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	38	
/JENNIFER DOAN/ Primary Examiner, Art Unit 2883	13 March 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

U.S. Patent and Trademark Office

Part of Paper No.: 20210313

IPR2025-01119
Belden EX1005

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	**Art Unit**
	JENNIFER DOAN	2883

INTERNATIONAL CLASSIFICATION					
CLAIMED					
G02B	/	6	/	00	
NON-CLAIMED					
	/		/		

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
385	135

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

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	38	
/JENNIFER DOAN/ Primary Examiner, Art Unit 2883	13 March 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	**Art Unit**
	JENNIFER DOAN	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	19	19	28	28	37	37						
2	2	11	11	20	20	29	29	38	38						
3	3	12	12	21	21	30	30								
4	4	13	13	22	22	31	31								
5	5	14	14	23	23	32	32								
6	6	15	15	24	24	33	33								
7	7	16	16	25	25	34	34								
8	8	17	17	26	26	35	35								
9	9	18	18	27	27	36	36								

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 38	
/JENNIFER DOAN/ Primary Examiner, Art Unit 2883 (Primary Examiner)	13 March 2021 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 3

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	JENNIFER DOAN	2883

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

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

CLAIM		DATE								
Final	Original	05/02/2019	11/20/2019	07/06/2020	03/13/2021					
1	1	=	✓	✓	=					
2	2	=	✓	✓	=					
3	3	=	✓	✓	=					
4	4	=	✓	✓	=					
5	5	=	✓	✓	=					
6	6	=	✓	✓	=					
7	7	=	✓	✓	=					
8	8	=	✓	✓	=					
9	9	=	✓	✓	=					
10	10	=	✓	✓	=					
11	11	=	✓	✓	=					
12	12	=	✓	✓	=					
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31	31			=	=					
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33	33			=	=					
34	34				=					
35	35				=					
36	36				=					
37	37				=					
38	38				=					

Main Concept Text
==========
A fiber optic enclosure assembly includes a housing having an interior region and a bearing mount disposed in the interior region of the housing. A cable spool is connectedly engaged with the bearing mount such that the cable spool selectively rotates within the housing. A termination module disposed on the cable spool so that the termination module rotates in unison with the cable spool. A method of paying out a fiber optic cable from a fiber optic enclosure includes rotating a cable spool, which has a subscriber cable coiled around a spooling portion of the cable spool, about an axis of a housing of the fiber optic enclosure until a desired length of subscriber cable is paid out. A termination module is disposed on the cable spool.

(No Concept Modifiers)
==========

Filters (2)
==========
Publication Date: From 2001-08-06 To 2007-08-06

Classic Syntax limited to: (enclosure* or enclos*) and cable* and (fiber* or fibre*) and (spool* or reel*) and (rotat* or spin* or turn*) and (cover* or shield* or lid*)

Options
=======
De-dup: None
Cut-off: None
Sort: Relevance

Content: Non-Patent Literature (24)
==========
IEEE Xplore Publications: IEEE Periodicals
IEEE Xplore Publications: IEEE Conferences
IEEE Xplore Publications: IEEE Standards
IEEE Xplore Publications: IEEE Early Access
IEEE Xplore Publications: SMPTE Periodicals
IEEE Xplore Publications: SMPTE Conferences
IEEE Xplore Publications: SMPTE Standards
IEEE Xplore Publications: MIT Press eBooks
IEEE Xplore Publications: Wiley-IEEE eBooks
IEEE Xplore Publications: IBM Periodicals
IEEE Xplore Publications: URSI Periodicals
IEEE Xplore Publications: VDE Conferences
IEEE Xplore Publications: Periodicals from China
IP.com Prior Art Database: The IP.com Journal
IP.com Prior Art Database: Internet Society RFC
IP.com Prior Art Database: IBM TDB Archive
IP.com Prior Art Database: Legacy Journals
IP.com Prior Art Database: Software Patent Institute
OnePetro.org: Periodicals at OnePetro.org
OnePetro.org: Conferences at OnePetro.org

OnePetro.org: Standards at OnePetro.org
Other Literature: IBM Redbooks
Other Literature: PubMed Central
Other Literature: arXiv.org

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S41	42,046	(G02B6/4457 or G02B6/3897 or G02B6/4452 or G02B6/4454 or G02B6/46 or G02B6/4446 or G02B6/4471 or G02B6/445 or G02B6/00).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/03/10 10:11
S42	256	((("KOWALCZYK") near3 ("Scott")) OR (("COAN") near3 ("Jonathan")) OR (("KAML") near3 ("Jonathan"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/03/10 16:32
S44	6	S42 and (enclosure$1 same cable$1 same (fiber$1 or fibre$1) same spool$3 same rotat$3 same cover$3 same pivot$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/03/10 16:33
S43	114	S42 and (enclosure$1 same cable$1 same (fiber$1 or fibre$1) same spool$3 same rotat$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/03/10 16:33
S45	8,035	(enclosure$1 or enclos$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/03/10 20:09
S46	1,210	((enclosure$1 or enclos$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)) and (g02b6/$.cpc. or g02b006/$)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/03/10 20:10
S47	324	(("20180113268") or ("8380035") or ("20120251053") or ("10754115") or ("10712518") or ("20190079259") or ("20180331761") or ("10181905") or ("10606017") or ("10033463") or ("20160238810") or ("20190222317") or ("10819435") or ("20190079258") or ("20180143387") or ("20180143386") or	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/11 15:22

		("10895705") or ("20200192042") or ("20180143389") or ("20180143388") or ("10371914") or ("7715679") or ("10935744") or ("20190086629") or ("20170235079") or ("10234648") or ("9494757") or ("10627592") or ("10788642") or ("20130170811") or ("20180143390") or ("20160025946") or ("20100247051") or ("20080131132") or ("8131126") or ("20080292261") or ("9057860") or ("8135256") or ("9535227") or ("20160109671") or ("20150043882") or ("9423584") or ("20190018210") or ("20140105558") or ("10502916") or ("8891931") or ("20170343758") or ("10078193") or ("8422847") or ("20100310224") or ("20140010513") or ("20150177472") or ("20110158599") or ("7894701") or ("20190041598") or ("8705929") or ("8189984") or ("20120328257") or ("9261666") or ("9223104") or ("7756379") or ("10606015") or ("10247897") or ("20090074370") or ("20180143391") or ("20170199344") or ("8494333") or ("9448377") or ("20150055925") or ("20160187607") or ("20210026091") or ("20190086628") or ("9606319") or ("9885846") or ("10495836") or ("8798429") or ("20140056568") or ("20160161693") or ("9563031") or ("20110044599") or ("9678293") or ("20170045699") or ("20170082816") or ("20140219622") or ("9523834") or ("20170336587") or ("10768386") or ("20180172939") or ("9223106") or ("20130209049") or ("10401584") or ("20160147030") or ("9188760") or ("20170231031") or ("20190342945") or ("20180249534") or ("20170031124") or ("10736179") or ("9791655") or ("20160028485") or ("20190064466") or ("10292206") or ("20110262146") or ("9078287") or ("20170299819") or ("9888524") or ("20130094828") or ("20200116956") or ("10663685") or ("20210014937") or ("9553669") or ("9823427") or ("20160018617") or ("10852488") or ("9261663") or ("9063316") or ("20170052339") or ("9417417") or ("20110222829") or ("9658420") or ("20180299632") or ("8265447") or				

		("20100074587") or ("10782499") or ("7496269") or ("8938147") or ("20190033548") or ("10268014") or ("20180329166") or ("10126516") or ("10627593")).PN. or (("9684142") or ("20130034333") or ("20150309276") or ("20200355884") or ("20190302387") or ("20110317974") or ("20140178025") or ("10884211") or ("9995898") or ("8111966") or ("8837894") or ("20090238531") or ("8565572") or ("10422970") or ("20150153532") or ("9557504") or ("20200110234") or ("20150241653") or ("20170235067") or ("20170285288") or ("20190331870") or ("10928602") or ("9170392") or ("20160327769") or ("20160062069")).PN.				
S48	683	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)) and (g02b6/$.cpc. or g02b006/$)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/03/11 22:35
S49	620	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3) and clos$3 and open$3 and (position$3 or state$1)) and (g02b6/$.cpc. or g02b006/$)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/03/12 10:16
S50	26	(enclosure$1 or enclos$3) same cable$1 same (fiber$1 or fibre$1) same (spool$3 or reel$3) same (rotat$3 or spin$3 or turn$3) same (cover$3 or shield$3 or lid$3) same (pivot$3 or swing$3 or mov$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/03/12 13:28

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S51	7,819	(enclosure$1 or enclos$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and	US-PGPUB; USPAT	OR	ON	2021/03/12 13:48

		(cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)				
S52	1,208	((enclosure$1 or enclos$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)) and (g02b6/$.cpc. or g02b006/$)	US-PGPUB; USPAT	OR	ON	2021/03/12 14:52
S53	682	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)) and (g02b6/$.cpc. or g02b006/$)	US-PGPUB; USPAT	OR	ON	2021/03/12 15:13
S54	619	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3) and clos$3 and open$3 and (position$3 or state$1)) and (g02b6/$.cpc. or g02b006/$)	US-PGPUB; USPAT	OR	ON	2021/03/12 15:32
S55	14	(enclosure$1 or enclos$3) same cable$1 same (fiber$1 or fibre$1) same (spool$3 or reel$3) same (rotat$3 or spin$3 or turn$3) same (cover$3 or shield$3 or lid$3) same (pivot$3 or swing$3 or mov$3)	US-PGPUB; USPAT	OR	ON	2021/03/12 15:45
S56	59	((enclosure$1 or enclos$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)).clm.	US-PGPUB; USPAT	OR	ON	2021/03/12 15:51
S57	26	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)).clm.	US-PGPUB; USPAT	OR	ON	2021/03/12 16:45
S58	14	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3) and clos$3 and open$3 and (position$3 or state$1)).clm.	US-PGPUB; USPAT	OR	ON	2021/03/12 17:10
S59	11	((enclosure$1 or enclos$3) same cable$1 same (fiber$1 or fibre$1) same (spool$3 or reel$3) same (rotat$3 or spin$3 or turn$3)	US-PGPUB; USPAT	OR	ON	2021/03/12 17:20

		same (cover$3 or shield$3 or lid$3) same (pivot$3 or swing$3 or mov$3)).clm.				

3/13/2021 10:21:52 PM
C:\Users\jdoan\Documents\EAST\Workspaces\15875564.wsp

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15875564	Filing Date	2018-01-19	Docket Number (if applicable)	02316.2584US22	Art Unit	2874
First Named Inventor	Kowalczyk et al.			Examiner Name	Doan, Jennifer		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 132725

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

IPR2025-01119
Belden EX1005

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

Signature of Registered U.S. Patent Practitioner			
Signature	/Julie K. Skoge/	Date (YYYY-MM-DD)	2021-03-03
Name	Julie K. Skoge	Registration Number	63431

This collection of information is required by 37 CFR 1.114. 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 12 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, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IPR2025-01119
Belden EX1005

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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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Kowalczyk et al.	Examiner:	Doan, Jennifer
Application No.:	15/875,564	Group Art Unit:	2874
Filed:	January 19, 2018	Docket No.:	02316.2584US22/ADC003176
Title:	Fiber Optic Enclosure with Internal Cable Spool and Movable Cover (as amended)		

Filed via EFS-Web

AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

In response to the Notice of Allowance mailed February 04, 2021 and further to the Request for Continued Examination being filed herewith, Applicant respectfully requests entry of the following amendment.

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims begin on page 3 of this paper.

Remarks begin on page 10 of this paper.

Amendments to the Specification:

Please amend the specification beginning at page 1, line 5 as follows:

This application is a continuation of application Serial No. 15/470,311, filed March 27, 2017 now U.S. Patent No. 10,712,518, which is a continuation of application Serial No. 14/979,870, filed December 28, 2015, now U.S. Patent No. 9,606,319, which is a continuation of application Serial No. 14/539,459, filed November 12, 2014, now U.S. Patent No. 9,261,666, which is a continuation of application Serial No. 14/132,691, filed December 18, 2013, now U.S. Patent No. 8,891,931, which is a continuation of application Serial No. 13/924,191, filed June 21, 2013, now U.S. Patent No. 8,705,929, which is a continuation of application Serial No. 13/479,015, filed May 23, 2012, now U.S. Patent No. 8,494,333, which is a continuation of application Serial No. 13/032,337, filed February 22, 2011, now U.S. Patent No. 8,189,984, which is a continuation of application Serial No. 12/793,556, filed June 3, 2010, now U.S. Patent No. 7,894,701, which is a continuation of application Serial No. 12/182,705, filed July 30, 2008, now U.S. Patent No. 7,756,379, which application claims the benefit of provisional application Serial Nos. 61/029,248, filed February 15, 2008 and 60/954,214, filed August 6, 2007, which applications are incorporated herein by reference in their entirety.

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Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A fiber optic enclosure comprising:

a wall mountable enclosure arrangement including a base, sidewalls that project forwardly from the base, and a cover, front portions of the sidewalls defining ~~an~~ a front access opening ~~and defining a cable opening separate from the access opening~~, the cover being pivotal relative to the base about a pivot axis between an open position providing access to the front access opening and a closed position covering the front access opening, the cover contacting the front portions of the sidewalls when disposed in the closed position;

the ~~housing~~ enclosure arrangement defining a first cable opening for routing a first cable into the enclosure arrangement ~~housing~~;

at least one of the side walls defining a second cable opening;

a spool mountable to the enclosure arrangement ~~housing~~ and positionable within the enclosure arrangement, the spool defining a spooling portion ~~housing~~;

a second fiber optic cable spooled about ~~a~~ the spooling portion of the spool, the second fiber optic cable including at least one optical fiber;

a fiber optic connector coupled to the at least one optical fiber of the second fiber optic cable;

a fiber optic adapter spaced inwardly from the sidewalls, the fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port;

the second fiber optic cable being payable from the spool through the second cable opening while the spool is mounted to the enclosure arrangement ~~housing~~, wherein the spool rotates relative to the enclosure arrangement ~~housing~~ about an axis of rotation as the second fiber optic cable is paid out from the spool, and wherein the fiber optic connector rotates in concert with the spool as the second fiber optic cable is paid out from the spool; and

wherein access for plugging a connectorized end of the first cable into the second connector port of the fiber optic adapter while the fiber optic adapter is spaced inwardly from the

sidewalls is: a) available from the front of the ~~housing~~ enclosure arrangement when the cover is in the open position; and b) not available from the front of the ~~housing~~ enclosure arrangement when the cover is in the closed position.

2. (Original) The fiber optic enclosure of claim 1, further comprising a hinge for allowing the cover to pivot between the open and closed positions.

3. (Previously Presented) The fiber optic enclosure of claim 1, wherein the fiber optic connector is supported on the spool when the second fiber optic cable is paid out from the spool.

4. (Previously Presented) The fiber optic enclosure of claim 1, wherein the fiber optic adapter is coupled to the fiber optic connector, and wherein the fiber optic adapter rotates in concert with the spool as the second fiber optic cable is paid out from the spool.

5. (Previously Presented) The fiber optic enclosure of claim 1, wherein the second fiber optic cable includes a plurality of optical fibers, wherein a plurality of fiber optic connectors terminate the plurality of optical fibers of the second fiber optic cable, wherein the fiber optic connectors rotate in concert with the spool as the second fiber optic cable is paid out from the spool, wherein the fiber optic enclosure further includes a plurality of fiber optic adapters, wherein the plurality of fiber optic connectors are secured within the plurality of fiber optic adapters when the second fiber optic cable is paid out from the spool.

6. (Currently Amended) The fiber optic enclosure of claim 1, wherein a cable seal is provided at the first cable opening.

7. (Currently Amended) The fiber optic enclosure of claim 1, further comprising a cable manager for storing slack cable ~~in a loop~~ within the enclosure arrangement ~~housing~~ at a location separate from the spooling portion of the spool.

8. (Original) The fiber optic enclosure of claim 7, wherein the cable manager is positioned such that the loop is not co-axial with the axis of rotation of the spool.

9. (Original) The fiber optic enclosure of claim 7, wherein the cable manager includes a curved guide surface.

10. (Currently Amended) The fiber optic enclosure of claim 9, wherein the cable manager is configured for storing the slack cable in a loop ~~coil~~.

11. (Original) The fiber optic enclosure of claim 9, wherein the cable manager includes a slack storage spool which defines the curved guide surface.

12. (Currently Amended) The fiber optic enclosure of claim 1, further comprising means for storing slack cable in a coil within the enclosure arrangement ~~housing~~.

13. (Original) A fiber optic enclosure comprising:

a housing including a front and a back, the housing including a front cover movable between an open position and a closed position, the housing including sides that extend between the front and the back;

the housing defining a cable opening through one of the sides of the housing;

a spool mountable within the housing;

a fiber optic cable coiled about a spooling portion of the spool, the fiber optic cable including at least one optical fiber;

a fiber optic connector coupled to the at least one optical fiber of the fiber optic cable;

a fiber optic adapter positioned within the housing, the fiber optic adapter including a first connector port receiving the fiber optic connector and also including an opposite second connector port, the front cover preventing the first and second connector ports of the fiber optic adapter from being accessed from the front of the housing when in the closed position, and the front cover allowing the first and second connector ports of the fiber optic adapter to be accessed from the front of the housing when in the open position;

the fiber optic cable being payable from the spool while the spool is positioned within the housing, wherein the spool rotates relative to the housing about an axis of rotation as the fiber

optic cable is paid out from the spool, and wherein the fiber optic connector and the fiber optic adapter rotate in concert with the spool as the fiber optic cable is paid out from the spool; and

a cable routing path for routing a subscriber cable to the second connector port of the fiber optic adapter, the cable routing path extending within the housing from the cable opening to the second connector port of the fiber optic adapter, at least a portion of the cable routing path being located between a rear side of the front cover and a front axial end of the spool when the front cover is in the closed position.

14. (Original) The fiber optic enclosure of claim 13, wherein the sides of the housing include first and second opposite sides, wherein the front cover is hingedly coupled to the first side of the housing, wherein the cable opening is located at the second side of the housing, and wherein the spool mounts at a spool mounting location within the housing where the spool is closer to the first side than the second side.

15. (Original) The fiber optic enclosure of claim 13, wherein the front cover is coupled to a main portion of the housing by a hinge.

16. (Original) The fiber optic enclosure of claim 13, wherein the fiber optic connector is supported on the spool when the fiber optic cable is paid out from the spool.

17. (Original) The fiber optic enclosure of claim 13, wherein the fiber optic adapter is coupled to the fiber optic connector.

18. (Currently Amended) The fiber optic enclosure of claim 13, wherein the fiber optic cable includes a plurality of optical fibers, wherein a plurality of fiber optic connectors terminate the plurality of optical fibers at ~~the~~ a first end of the fiber optic cable, wherein the fiber optic connectors rotate in concert with the spool as the fiber optic cable is paid out from the spool, wherein the ~~telecommunications~~ fiber optic enclosure further includes a plurality of fiber optic adapters, and wherein the plurality of fiber optic connectors are secured within the plurality of fiber optic adapters when the fiber optic cable is paid out from the spool.

19. (Currently Amended) The fiber optic enclosure of claim 13, further comprising a manual lock configured to lock the spool with varying amounts of the fiber optic cable paid out from ~~off~~ the spool, the manual lock being lockable without moving the fiber optic adapter relative to the spool.

20. (Original) The fiber optic enclosure of claim 19, wherein the spool defines apertures through which a pin can be inserted to lock the spool to the housing.

21. (Currently Amended) The fiber optic enclosure of claim 9, wherein ~~the curved guide surface includes~~ a finger extends laterally from the curved guide surface to assist in retention of the slack cable.

22. (Currently Amended) A fiber optic enclosure comprising:

a wall mountable enclosure arrangement including a base, sidewalls that project forwardly from the base, and a cover, front portions of the sidewalls defining ~~an~~ a front access opening, the enclosure arrangement defining a cable opening ~~and defining a cable opening separate from the access opening~~, the cover being pivotal relative to the base about a pivot axis between a closed position covering the front access opening and an open position providing access to the front access opening, the cover contacting the front portions of the sidewalls when disposed in the closed position;

a cable spool mounted to the enclosure arrangement so that the cable spool is rotatable relative to the enclosure arrangement about a rotation axis that is transverse to the pivot axis, the cable spool including a spooling portion;

a fiber optic cable spooled about the spooling portion of the cable spool, the fiber optic cable including at least one optical fiber;

a fiber optic connector terminating the at least one optical fiber of the fiber optic cable, the fiber optic connector rotating in unison with the cable spool when the cable spool rotates about the rotation axis; and

a fiber optic adapter mounted to ~~carried by the base of~~ the enclosure arrangement, the fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port;

the cover ~~extends~~ extending across the fiber optic adapter when disposed in the closed position.

23. (Previously Presented) The fiber optic enclosure of claim 22, wherein the cable spool is disposed between the base and the cover when the cover is in the closed position.

24. (Previously Presented) The fiber optic enclosure of claim 22, wherein the sidewalls are devoid of openings suitable for mounting the fiber optic adapter.

25. (Previously Presented) The fiber optic enclosure of claim 22, wherein a cable seal is disposed at the cable opening for enabling a cable to be routed into the enclosure arrangement.

26. (Previously Presented) The fiber optic enclosure of claim 22, wherein the cable spool carries a cable management structure so that the cable management structure rotates in unison with the cable spool when the cable spool rotates relative to the enclosure arrangement.

27. (Previously Presented) The fiber optic enclosure of claim 26, wherein the cable management structure is configured for storing slack length of the fiber optic cable in a coil.

28. (Previously Presented) The fiber optic enclosure of claim 26, wherein the cable management structure includes a curved guide wall.

29. (Previously Presented) The fiber optic enclosure of claim 22, wherein a hinge is coupled to one of the sidewalls and to the cover to define the pivot axis.

30. (Previously Presented) The fiber optic enclosure of claim 29, wherein the hinge is located at a first side of the enclosure arrangement, wherein the cable opening is defined at a second side of the enclosure arrangement, and wherein a corner is defined between the first side of the enclosure arrangement and the second side of the enclosure arrangement.

31. (Previously Presented) The fiber optic enclosure of claim 22, wherein the base defines a plurality of rear fastener openings for use in securing the enclosure arrangement at an installation surface.

32. (Previously Presented) The fiber optic enclosure of claim 22, wherein the base and the sidewalls at least partially surround the cable spool.

33. (Previously Presented) The fiber optic enclosure of claim 22, wherein the cable spool is mounted to the base so that the rotation axis extends through the access opening and intersects the cover when the cover is disposed in the closed position.

34. (NEW) The fiber optic enclosure of claim 1, further comprising a cable routing path for routing the first cable to the second connector port of the fiber optic adapter, the cable routing path extending within the enclosure arrangement from the first cable opening to the second connector port of the fiber optic adapter.

35. (NEW) The fiber optic enclosure of claim 34, wherein the fiber optic adapter is located adjacent an axial end of the spool when the cover is in the closed position and the connectorized end is plugged into the second connector port.

36. (NEW) The fiber optic enclosure of claim 1, wherein the second cable opening is separate from the front access opening.

37. (NEW) The fiber optic enclosure of claim 1, wherein the first and second cable openings are separate from one another, and wherein the first cable opening is defined at least in part by one of the side walls.

38. (NEW) The fiber optic enclosure of claim 22, further comprising a cable routing path for routing the first cable to the second connector port of the fiber optic adapter, the cable routing path extending within the enclosure arrangement from the first cable opening to the second connector port of the fiber optic adapter.

REMARKS

This paper responds to the Notice of Allowance mailed February 04, 2021. A Request for Continued Examination is being filed herewith. Claims 1-33 have been allowed. Claims 34-38 are newly added. Accordingly, claims 1-38 are pending in the application. Editorial revisions are made to claims 1, 6, 7, 10, 12, 18, 19, 21, and 22 to address antecedent basis and other formal matters. Support for these changes can be found throughout the specification and figures. No new matter has been added.

If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: March 03, 2021

/Julie K. Skoge/
Julie K. Skoge
Reg. No. 63,431

142510
PATENT TRADEMARK OFFICE

Electronic Patent Application Fee Transmittal

Application Number:	15875564
Filing Date:	19-Jan-2018
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Filer:	Julie Katherine Skoge/Rebecca Krueger
Attorney Docket Number:	02316.2584US22/ADC003176

Filed as Large 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	1202	5	100	500
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	2000	2000
		Total in USD ($)		**2500**

Electronic Acknowledgement Receipt

EFS ID:	42080506
Application Number:	15875564
International Application Number:	
Confirmation Number:	6390
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Customer Number:	142510
Filer:	Julie Katherine Skoge/Rebecca Krueger
Filer Authorized By:	Julie Katherine Skoge
Attorney Docket Number:	02316.2584US22/ADC003176
Receipt Date:	03-MAR-2021
Filing Date:	19-JAN-2018
Time Stamp:	16:30:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2500
RAM confirmation Number	E202133G30412422
Deposit Account	132725
Authorized User	Rebecca Krueger

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

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	2021-03-03-RCE.PDF	1349936 f4d62629a7ed634aab2d5fa5fc13254430e2a7fd	no	3
Warnings:					
Information:					
2		2021-03-03-Amendment-w-RCE.PDF	101133 dee079cc2f8d53ede74e432c8871661ce8b5a2b1	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment Submitted/Entered with Filing of CPA/RCE	1	1
	Specification	2	2
	Claims	3	9
	Applicant Arguments/Remarks Made in an Amendment	10	10

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32608 e39744ec56f7cc020b3e494cf316cfcaac9ddbde	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1483677	

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New Applications Under 35 U.S.C. 111

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.

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

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.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/875,564	Filing Date 01/19/2018	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

	(Column 1)	(Column 2)			
FOR	NUMBER FILED	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 $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ 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)			
AMENDMENT	03/03/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 38	Minus	** 33	= 5		x $100 =	500
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	500

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ 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".	/JERMAINE D MINOR/
*** 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 number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 12 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, 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.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

142510 7590 02/04/2021

M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

EXAMINER
DOAN, JENNIFER

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 02/04/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

TITLE OF INVENTION: FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	05/04/2021

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE 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.

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.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

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.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

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)

142510 7590 02/04/2021
M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

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.

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.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

TITLE OF INVENTION: FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	05/04/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
DOAN, JENNIFER	2883	385-135000

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,
(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.

1 _____
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)

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. _____

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 _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

142510 7590 02/04/2021

M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

EXAMINER	
DOAN, JENNIFER	
ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 02/04/2021

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. 15/875,564	Applicant(s) Kowalczyk et al.	
	Examiner JENNIFER DOAN	Art Unit 2883	AIA (FITF) Status No

-- 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 Request for Continued Examination (RCE) filed on 10/12/20.
   ☐ 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 1-33 . 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 101220.
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 _____.

/JENNIFER DOAN/
Primary Examiner, Art Unit 2883

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 10/12/20 has been acknowledged and entered. Claims 1-33 are pending in the application.

Information Disclosure Statement

3. The prior art documents submitted by applicant in the Information Disclosure Statement filed on 10/12/20, have all been considered and made of record (note the attached copy of form PTO-1449). However, none of the references, cited in the Information Disclosure Statement, teaches or suggests an apparatus of a fiber optic enclosure of the claimed invention.

Specification

4. Applicants' cooperation is requested in correcting any errors of which applicants may become aware in the specification.

Reasons for Allowance

5. Claims 1-33 are allowed.

6. The following is an examiner's statement of reasons for allowance:

The prior art of record fails to disclose or reasonably suggest all the limitations of claim 1. Specifically, the prior art fails to disclose a fiber optic enclosure comprising a wall mountable enclosure arrangement including a base, sidewalls that project forwardly from the base, and a cover, the sidewalls defining an access opening and defining a cable opening separate from the access opening, the cover being movable pivotal relative to the base about a pivot axis between an open position providing access to the access opening and a closed position covering the access opening, the cover contacting the sidewalls when disposed in the closed position; a spool mountable to the housing and positionable within the housing; a second fiber optic cable spooled about a spooling portion of the spool, the second fiber optic cable including at least one optical fiber; a fiber optic adapter spaced inwardly from the sidewalls, the fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port; the second fiber optic cable being payable from the spool while the spool is mounted to the housing, wherein the spool rotates relative to the housing about an axis of rotation as the second fiber optic cable is paid out from the spool, and wherein the fiber optic connector rotates in concert with the spool as the fiber optic cable is paid out from the spool; and wherein access for plugging a connectorized end of the first cable into the second connector port of the fiber optic adapter while the fiber optic adapter is spaced inwardly from the sidewalls is: a) available from the front of the housing when the cover is in the open position; and b) not available from the front of the housing when the cover is in the

closed position, in combination with other recited limitations in the claim.

Claims 2-12 and 21 depend from claim 1.

The prior art of record fails to disclose or reasonably suggest all the limitations of claim 13. Specifically, the prior art fails to disclose a fiber optic enclosure comprising a housing including a front cover movable between an open position and a closed position, the housing including sides that extend between the front and the back; a spool mountable within the housing; a fiber optic cable coiled about a spooling portion of the spool, the fiber optic cable including at least one optical fiber; a fiber optic adapter positioned within the housing, the fiber optic adapter including a first connector port receiving the fiber optic connector and also including an opposite second connector port, the front cover preventing the first and second connector ports of the fiber optic adapter from being accessed from the front of the housing when in the closed position, and the front cover allowing the first and second connector ports of the fiber optic adapter to be accessed from the front of the housing when in the open position; the fiber optic cable being payable from the spool while the spool is positioned within the housing, wherein the spool rotates relative to the housing about an axis of rotation as the fiber optic cable is paid out from the spool, and wherein the fiber optic connector and the fiber optic adapter rotate in concert with the spool as the fiber optic cable is paid out from the spool; and a cable routing path for routing a subscriber cable to the second connector port of the fiber optic adapter, the cable routing path extending within the housing from the cable opening to the second connector port of the fiber optic adapter, at least a portion of the cable routing path being located between a rear side of the front cover and a front axial end of the spool when the front cover is in the closed position, in combination with other recited

limitations in the claim.

Claims 14-20 depend from claim 13.

The prior art of record fails to disclose or reasonably suggest all the limitations of claim 22. Specifically, the prior art fails to disclose a fiber optic enclosure comprising a wall mountable enclosure arrangement including a base, sidewalls that project forwardly from the base, and a cover, the sidewalls defining an access opening and defining a cable opening separate from the access opening, the cover being pivotal relative to the base about a pivot axis between a closed position covering the access opening and an open position providing access to the access opening, the cover contacting the sidewalls when disposed in the closed position; a cable spool mounted to the enclosure arrangement so that the cable spool is rotatable relative to the enclosure arrangement about a rotation axis that is transverse to the pivot axis; a fiber optic cable spooled about the spooling portion of the cable spool; a fiber optic connector terminating the at least one optical fiber of the fiber optic cable, the fiber optic connector rotating in unison with the cable spool when the cable spool rotates about the rotation axis; and a fiber optic adapter carried by the base of the enclosure arrangement, the fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port; the cover extends across the fiber optic adapter when disposed in the closed position, in combination with other recited limitations in the claim.

Claims 23-33 depend from claim 22.

The examiner agrees with the applicants' arguments on pages 9-12 in the remarks and fully concurs that none of the references disclose or suggest an apparatus of a fiber optic enclosure with all limitations as defined above.

Claims 1-33 are therefore allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Doan whose telephone number is (571) 272-2346. The examiner can normally be reached on Monday to Friday from 7:00am to 3:30pm.

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 571-270-17391739. 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 http://pair-direct.uspto.gov. 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.

/JENNIFER DOAN/
Primary Examiner, Art Unit 2883

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	JENNIFER DOAN	2883

CPC - Searched*		
Symbol	Date	Examiner
G02B6/4457 or G02B6/3897 or G02B6/4452; G02B6/4454; G02B6/46; G02B6/4446; G02B6/4471; G02B6/445; G02B6/00	01/28/2021	JD

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* 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
East search (text search - see search history printout)	01/30/2021	JD
Checked the related applications	01/30/2021	JD
Non-Patent Literature search	01/29/2021	JD

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
US-PGPUB & USPAT text search (see interference search printout)		01/30/2021	JD

IPR2025-01119
Belden EX1005

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	JENNIFER DOAN	2883

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	**Art Unit**
	JENNIFER DOAN	2883

CPC							
Symbol						**Type**	**Version**
G02B	/	6	/	4457		F	2013-01-01
G02B	/	6	/	445		I	2013-01-01
G02B	/	6	/	4441		I	2013-01-01
G02B	/	6	/	4446		I	2013-01-01
G02B	/	6	/	4471		I	2013-01-01
G02B	/	6	/	3897		I	2013-01-01
G02B	/	6	/	4452		I	2013-01-01
G02B	/	6	/	4453		I	2013-01-01
G02B	/	6	/	4454		I	2013-01-01
G02B	/	6	/	46		I	2013-01-01

CPC Combination Sets								
Symbol						**Type**	**Set**	**Ranking**	**Version**
	/		/						

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	33	
/JENNIFER DOAN/ Primary Examiner, Art Unit 2883	30 January 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

U.S. Patent and Trademark Office

Part of Paper No.: 20210130

IPR2025-01119
Belden EX1005

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	**Art Unit**
	JENNIFER DOAN	2883

INTERNATIONAL CLASSIFICATION				
CLAIMED				
G02B	/	6	/	00

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
385	135

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

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	33	
/JENNIFER DOAN/ Primary Examiner, Art Unit 2883	30 January 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

U.S. Patent and Trademark Office

Part of Paper No.: 20210130

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	**Art Unit**
	JENNIFER DOAN	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	19	19	28	28								
2	2	11	11	20	20	29	29								
3	3	12	12	21	21	30	30								
4	4	13	13	22	22	31	31								
5	5	14	14	23	23	32	32								
6	6	15	15	24	24	33	33								
7	7	16	16	25	25										
8	8	17	17	26	26										
9	9	18	18	27	27										

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	33	
/JENNIFER DOAN/ Primary Examiner, Art Unit 2883	30 January 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

U.S. Patent and Trademark Office

Part of Paper No.: 20210130

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BIB DATA SHEET

CONFIRMATION NO. 6390

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/875,564	01/19/2018	385	2883	02316.2584US22/ADC003176

APPLICANTS

CommScope Technologies LLC, Hickory, NC;

INVENTORS

Scott C. Kowalczyk, Savage, MN;
Jonathan Walter Coan, Savage, MN;
Jonathan R. Kaml, Shakopee, MN;

**** CONTINUING DATA ***************************

This application is a CON of 15/470,311 03/27/2017 PAT 10712518
which is a CON of 14/979,870 12/28/2015 PAT 9606319
which is a CON of 14/539,459 11/12/2014 PAT 9261666
which is a CON of 14/132,691 12/18/2013 PAT 8891931
which is a CON of 13/924,191 06/21/2013 PAT 8705929
which is a CON of 13/479,015 05/23/2012 PAT 8494333
which is a CON of 13/032,337 02/22/2011 PAT 8189984
which is a CON of 12/793,556 06/03/2010 PAT 7894701
which is a CON of 12/182,705 07/30/2008 PAT 7756379
which claims benefit of 61/029,248 02/15/2008
and claims benefit of 60/954,214 08/06/2007

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

02/12/2018

Foreign Priority claimed ❑ Yes ☑ No 35 USC 119(a-d) conditions met ❑ Yes ☑ No Verified and Acknowledged /JENNIFER DOAN/ Examiner's Signature	❑ Met after Allowance JD Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		MN	14	20	2

ADDRESS

M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402
UNITED STATES

TITLE

FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER

FILING FEE RECEIVED		
3020	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _____

BIB (Rev. 05/07).

		❑ Credit

Main Concept Text
==========
A fiber optic enclosure assembly includes a housing having an interior region and a bearing mount disposed in the interior region of the housing. A cable spool is connectedly engaged with the bearing mount such that the cable spool selectively rotates within the housing. A termination module disposed on the cable spool so that the termination module rotates in unison with the cable spool. A method of paying out a fiber optic cable from a fiber optic enclosure includes rotating a cable spool, which has a subscriber cable coiled around a spooling portion of the cable spool, about an axis of a housing of the fiber optic enclosure until a desired length of subscriber cable is paid out. A termination module is disposed on the cable spool.

(No Concept Modifiers)
==========

Filters (2)
==========
Publication Date: From 2002-08-06 To 2007-08-06

Classic Syntax limited to: enclosure* and cable* and (fiber* or fibre*) and spool* and mount*

Options
=======
De-dup: None
Cut-off: None
Sort: Relevance

Content: Non-Patent Literature (24)
==========
IEEE Xplore Publications: IEEE Periodicals
IEEE Xplore Publications: IEEE Conferences
IEEE Xplore Publications: IEEE Standards
IEEE Xplore Publications: IEEE Early Access
IEEE Xplore Publications: SMPTE Periodicals
IEEE Xplore Publications: SMPTE Conferences
IEEE Xplore Publications: SMPTE Standards
IEEE Xplore Publications: MIT Press eBooks
IEEE Xplore Publications: Wiley-IEEE eBooks
IEEE Xplore Publications: IBM Periodicals
IEEE Xplore Publications: URSI Periodicals
IEEE Xplore Publications: VDE Conferences
IEEE Xplore Publications: Periodicals from China
IP.com Prior Art Database: The IP.com Journal
IP.com Prior Art Database: Internet Society RFC
IP.com Prior Art Database: IBM TDB Archive
IP.com Prior Art Database: Legacy Journals
IP.com Prior Art Database: Software Patent Institute
OnePetro.org: Periodicals at OnePetro.org
OnePetro.org: Conferences at OnePetro.org
OnePetro.org: Standards at OnePetro.org

Other Literature: IBM Redbooks
Other Literature: PubMed Central
Other Literature: arXiv.org

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	27	(("6456773") or ("6631237") or ("6926130") or ("7190767") or ("7399198") or ("20020117571") or ("20020125800") or ("20040129522") or ("20050036587") or ("20060006038") or ("20060126883")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/01/28 12:20
S4	254	((("KOWALCZYK") near3 ("Scott")) OR (("COAN") near3 ("Jonathan")) OR (("KAML") near3 ("Jonathan"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/01/28 13:44
S5	176	S4 and ((fiber$1 or fibre$1) same enclosure$1)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/01/28 13:45
S6	163	S4 and (enclosure$1 same cable$1 same (fiber$1 or fibre$1))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/01/28 13:46
S7	126	S4 and (enclosure$1 same cable$1 same (fiber$1 or fibre$1) same spool$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/01/28 13:47
S10	41,444	(G02B6/4457 or G02B6/3897 or G02B6/4452 or G02B6/4454 or G02B6/46 or G02B6/4446 or G02B6/4471 or G02B6/445 or G02B6/00).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/01/28 16:18
S11	26	("1276825" | "1442999" | "1446410" | "1474580" | "2502496" | "2521226" | "2727703" | "3131729" | "3657491" | "3667417" | "3920308" | "3940086" | "4053118" | "4081258" | "4201278" | "4384688" | "4587801" | "4635875" | "4657140" | "4666237" | "4767073" | "4869437" | "4883337" | "4913369" | "4939798" | "RE20995").PN.	US-PGPUB; USPAT	OR	ON	2021/01/28 19:53

S12	101	("20020117571" | "20020125800" | "20040129522" | "20050036587" | "20060006038" | "20060126883" | "3585324" | "4138177" | "4880182" | "4989582" | "5641067" | "5733141" | "6243526" | "6442240" | "6456773" | "6631237" | "6926130" | "7190767" | "7399198" | "5069523" | "6702077" | "6795633" | "6889701" | "7120349" | "20030223724" | "20050002633" | "20050277829" | "20060153516" | "20170235079" | "4379615" | "5124606" | "6195494" | "6427045" | "6427781" | "6511009" | "6533205" | "7065282" | "7493003" | "8818157" | "9223103" | "9310578" | "9429728" | "9453971" | "9664871" | "9684142" | "9703063" | "9766414" | "9885846" | "RE47307" | "2282156" | "2767426" | "3346705" | "3433579" | "3612424" | "3837448" | "3983977" | "4143746" | "4470558" | "4520239" | "4953810" | "5172841" | "5246377" | "5310356" | "5528453" | "5773757" | "5957401" | "6035032" | "6135254" | "6176559" | "6220762" | "6223675" | "6286777" | "6349893" | "6361360" | "6419175" | "1276825" | "1442999" | "1446410" | "1474580" | "2502496" | "2521226" | "2727703" | "3131729" | "3657491" | "3667417" | "3920308" | "3940086" | "4053118" | "4081258" | "4201278" | "4384688" | "4587801" | "4635875" | "4657140" | "4666237" | "4767073" | "4869437" | "4883337" | "4913369" | "4939798" | "RE20995").PN.	US-PGPUB; USPAT	OR	ON	2021/01/28 20:37
S13	272	(("2282156") or ("2767426") or ("3346705") or ("3433579") or ("3612424") or ("3837448") or ("3983977") or ("4143746") or ("4470558") or ("4520239") or ("4953810") or ("5172841") or ("5246377") or ("5310356") or ("5528453") or ("5773757") or ("5957401") or ("6035032") or ("6135254") or ("6176559") or ("6220762") or ("6223675") or ("6286777") or ("6349893") or ("6361360") or ("6419175") or ("6433274") or ("6721484") or ("6758314") or ("6819854") or ("6948680") or ("7036601") or	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/01/28 22:00

		("7050041") or ("7052281") or ("7306101") or ("RE45153") or ("20020023984") or ("20020083538") or ("20030042348") or ("20030142817") or ("20030230667") or ("20040052498") or ("20040065443") or ("20040084271") or ("20040200332") or ("20040209505") or ("20050062881") or ("20050128769") or ("20050185910") or ("20050258203") or ("20060028198") or ("20060054760") or ("20060169856") or ("20060185953") or ("20060186255") or ("20060187696") or ("20060231672") or ("20060264094") or ("20060266605") or ("20070023559") or ("20070036506") or ("20070096538") or ("20070108333") or ("20070176045") or ("20080011514") or ("20080011990") or ("20080013893") or ("20080093187") or ("20080116312") or ("20080170831") or ("20080199139") or ("20090057085")).PN.				
S14	94	(("4379615") or ("5124606") or ("6195494") or ("6427045") or ("6427781") or ("6511009") or ("6533205") or ("7065282") or ("7493003") or ("8818157") or ("9223103") or ("9310578") or ("9429728") or ("9453971") or ("9664871") or ("9684142") or ("9703063") or ("9766414") or ("9885846") or ("RE47307") or ("20030223724") or ("20050002633") or ("20050277829") or ("20060153516") or ("20170235079")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/01/29 10:39
S15	21	(("5069523") or ("6702077") or ("6795633") or ("6889701") or ("7120349")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/01/29 11:35
S17	7,962	(enclosure$1 or enclos$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/01/29 16:21
S18	1,204	((enclosure$1 or enclos$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or	US-PGPUB; USPAT; USOCR; EPO;	OR	ON	2021/01/29 16:23

		lid$3) and (pivot$3 or swing$3 or mov$3)) and (g02b6/$.cpc. or g02b006/$)	JPO; DERWENT			
S19	675	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)) and (g02b6/$.cpc. or g02b006/$)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/01/29 20:26
S20	614	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3) and clos$3 and open$3 and (position$3 or state$1)) and (g02b6/$.cpc. or g02b006/$)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/01/29 20:33
S21	26	(enclosure$1 or enclos$3) same cable$1 same (fiber$1 or fibre$1) same (spool$3 or reel$3) same (rotat$3 or spin$3 or turn$3) same (cover$3 or shield$3 or lid$3) same (pivot$3 or swing$3 or mov$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2021/01/29 22:44
L5	38	(("3585324") or ("4138177") or ("4880182") or ("4989582") or ("5641067") or ("5733141") or ("6243526") or ("6442240")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/01/30 20:12

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S23	7,734	(enclosure$1 or enclos$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)	US-PGPUB; USPAT	OR	ON	2021/01/29 23:03
S24	1,198	((enclosure$1 or enclos$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or	US-PGPUB; USPAT	OR	ON	2021/01/29 23:15

		swing$3 or mov$3)) and (g02b6/$.cpc. or g02b006/$)				
S25	674	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)) and (g02b6/$.cpc. or g02b006/$)	US-PGPUB; USPAT	OR	ON	2021/01/29 23:28
S26	613	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3) and clos$3 and open$3 and (position$3 or state$1)) and (g02b6/$.cpc. or g02b006/$)	US-PGPUB; USPAT	OR	ON	2021/01/29 23:33
S27	14	(enclosure$1 or enclos$3) same cable$1 same (fiber$1 or fibre$1) same (spool$3 or reel$3) same (rotat$3 or spin$3 or turn$3) same (cover$3 or shield$3 or lid$3) same (pivot$3 or swing$3 or mov$3)	US-PGPUB; USPAT	OR	ON	2021/01/29 23:37
S28	59	((enclosure$1 or enclos$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)).clm.	US-PGPUB; USPAT	OR	ON	2021/01/29 23:42
S29	26	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3)).clm.	US-PGPUB; USPAT	OR	ON	2021/01/30 00:09
S30	14	((enclosure$1 or enclos$3) and adapter$1 and (connector$1 or connect$3) and cable$1 and (fiber$1 or fibre$1) and (spool$3 or reel$3) and (rotat$3 or spin$3 or turn$3) and (cover$3 or shield$3 or lid$3) and (pivot$3 or swing$3 or mov$3) and clos$3 and open$3 and (position$3 or state$1)).clm.	US-PGPUB; USPAT	OR	ON	2021/01/30 00:30
S31	11	((enclosure$1 or enclos$3) same cable$1 same (fiber$1 or fibre$1) same (spool$3 or reel$3) same (rotat$3 or spin$3 or turn$3) same (cover$3 or shield$3 or lid$3) same (pivot$3 or swing$3 or mov$3)).clm.	US-PGPUB; USPAT	OR	ON	2021/01/30 00:42

1/30/2021 9:05:53 PM
C:\Users\jdoan\Documents\EAST\Workspaces\15875564.wsp

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
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	15875564
Filing Date	2018-01-19
First Named Inventor	Scott C. Kowalczyk
Art Unit	2874
Examiner Name	Ullah, Akm E.
Attorney Docket Number	02316.2584US22/ADC003176

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	3585324		1971-06-15	Renndorfer et al.	
	2	4138177		1979-02-06	van Valer	
	3	4880182		1989-11-14	Gelfman	
	4	4989582		1991-02-05	Sakiyama et al.	
	5	5641067		1997-06-24	Ellis	
	6	5733141		1998-03-31	Penrod	
	7	6243526	B1	2001-06-05	Garibay et al.	
	8	6442240	B1	2002-08-27	Otto	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.D/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15875564
	Filing Date	2018-01-19
	First Named Inventor	Scott C. Kowalczyk
	Art Unit	2874
	Examiner Name	Ullah, Akm E.
	Attorney Docket Number	02316.2584US22/ADC003176

	9	6456773	B1	2002-09-24	Keys	
	10	6631237	B2	2003-10-07	Knudsen et al.	
	11	6926130	B2	2005-08-09	Skowronski	
	12	7190767	B2	2007-03-13	Kracker et al.	
	13	7399198	B2	2008-07-15	Thalheimer et al.	

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	1	20020117571	A1	2002-08-29	Scott et al.	
	2	20020125800	A1	2002-09-12	Knudsen et al.	
	3	20040129522	A1	2004-07-08	Skowronski	
	4	20050036587	A1	2005-02-17	Kracker et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.D/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15875564
	Filing Date	2018-01-19
	First Named Inventor	Scott C. Kowalczyk
	Art Unit	2874
	Examiner Name	Ullah, Akm E.
	Attorney Docket Number	02316.2584US22/ADC003176

	5	20060006038	A1	2006-01-12	Beverlin	
	6	20060126883	A1	2006-06-15	Thalheimer et al.	

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Examiner Signature	/JENNIFER DOAN/ (01/28/2021)	Date Considered	01/28/2021

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CERTIFICATION STATEMENT

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

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☐ 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	/Julie K. Skoge/	Date (YYYY-MM-DD)	2020-10-12
Name/Print	Julie K. Skoge	Registration Number	63,431

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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.

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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 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.

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First Named Inventor	Scott C. Kowalczyk
Art Unit	2874
Examiner Name	Ullah, Akm E.
Attorney Docket Number	02316.2584US22/ADC003176

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	3585324		1971-06-15	Renndorfer et al.	
	2	4138177		1979-02-06	van Valer	
	3	4880182		1989-11-14	Gelfman	
	4	4989582		1991-02-05	Sakiyama et al.	
	5	5641067		1997-06-24	Ellis	
	6	5733141		1998-03-31	Penrod	
	7	6243526	B1	2001-06-05	Garibay et al.	
	8	6442240	B1	2002-08-27	Otto	

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Signature	/Julie K. Skoge/	Date (YYYY-MM-DD)	2020-10-12
Name/Print	Julie K. Skoge	Registration Number	63,431

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REMARKS

This paper responds to the Final Office Action mailed July 10, 2020. A Request for Continued Examination and an Information Disclosure Statement are being filed herewith. Claims 1-33 remain pending in the application. Claim 1 is amended. Support for these changes can be found throughout the specification and figures. No new matter has been added.

Reexamination and allowance of the pending claims are respectfully requested.

Allowed Claims

Applicant thanks the Examiner for indicating that claims 13-33 are allowed.

Claim Rejections - § 103

- Claims 1-12 are rejected under 35 U.S.C. 103 as being unpatentable over U.S. Patent No. 7,715,679 to Kowalczyk et al. (hereinafter "Kowalczyk"). Applicant respectfully traverses the rejection.

Kowalczyk is not prior art under 35 U.S.C. 103. Under pre-AIA 35 U.S.C. 103(c), a reference that was prior art via pre-AIA 35 U.S.C. 102(e) is disqualified as prior art against the claimed invention "if that subject matter and the claimed invention were, at the time the claimed invention was made, owned by the same person or subject to an obligation of assignment to the same person."

Kowalcyzk was published November 27, 2008, which is after the July 30, 2008 filing date of the present application. Accordingly, Kowalczyk would only qualify as prior art under 35 U.S.C. 102(e). However, at the time the claimed invention was made, Kowalczyk and the claimed invention were both owned by ADC Telecommunications, Inc. ("ADC").

The present application claims the benefit, through a series of continuations, to U.S. Appl. No. 12/182705 filed July 30, 2008, which claims the benefit of U.S. Provisional Application No. 60/954,214 filed August 06, 2007. When the claimed inventions of both U.S. Appl. No. 12/182705 and U.S. Provisional Application No. 60/954,214 were conceived, the inventors were subject to an obligation to assign their rights, and subsequently did assign their rights, in the claimed inventions to ADC.

Kowalczyk was filed May 1, 2008 and claims the benefit of U.S. Provisional Application No. 60/916495 filed May 07, 2007. When the claimed inventions of both Kowalczyk and U.S. Provisional Application No. 60/916495 were conceived, the inventors were subject to an obligation to assign their rights, and subsequently did assign their rights, in the claimed inventions to ADC. Accordingly, at the time the claimed invention was conceived, the inventors of both the claimed invention and U.S. Provisional Application No. 60/916495 were obligated to assign their rights to ADC. Therefore, Kowalczyk is disqualified as prior art under 35 U.S.C. 103.

For at least these reasons, the rejection of claims 1-12 under 35 U.S.C. 103 over Kowalczyk is moot. Withdrawal of the rejection is respectfully requested. Applicant does not otherwise concede the correctness of the rejection and reserves the right to make additional arguments if necessary.

- Claims 1-12 are rejected under 35 U.S.C. 103 as being unpatentable over U.S. Patent No. 6,220,413 to Walters (hereinafter "Walters") in view of U.S. Patent No. 6,933,441 to Fuller et al. (hereinafter "Fuller"). Applicant respectfully traverses the rejection.

The combination of Walters and Fuller does not disclose or suggest a wall mountable enclosure arrangement in combination with the other features recited in amended claim 1. The combination of Walters and Fuller also does not disclose or suggest access for plugging a connectorized end of the first cable into the second connector port of the fiber optic adapter while the fiber optic adapter is spaced inwardly from the sidewalls is: a) available from the front of the housing when the cover is in the open position; and b) not available from the front of the housing when the cover is in the closed position.

Rather, both Walters and Fuller disclose rack-mounted housings. See Walters, column 4, lines 7-9; and Fuller, column 1, lines 21-42. No reason is provided in either Walters or Fuller to modify the reels for a wall mountable enclosure arrangement. Furthermore, in Walters, a connectorized end of a cable is plugged into the second port of a fiber optic adapter only when the fiber optic adapter is mounted to the frame docking station, which is not spaced inwardly

from a sidewall. Rather, the frame docking station is mounted at the sidewall. See Walters, FIG. 6 (reproduced below).

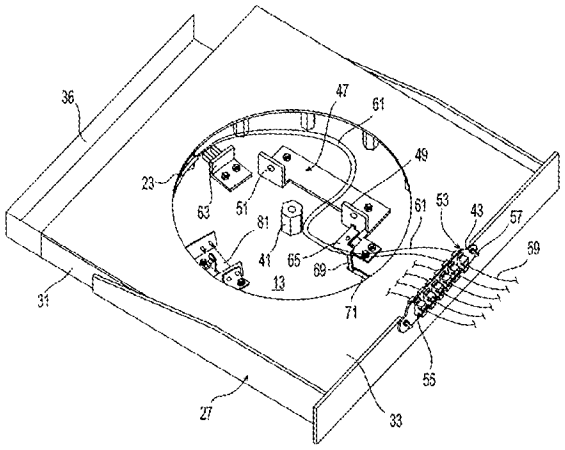


Fig. 6

In Fuller, the adapters are mounted to the sidewalls. See Fuller, FIG. 3 (reproduced below).

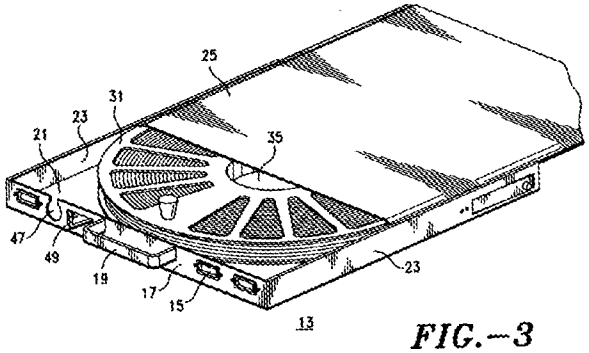


FIG.—3

Accordingly, neither reference suggests plugging a cable into an adapter that is spaced inwardly from a sidewall.

For at least these reasons, Walters would not lead a person skilled in the art to the invention of claim 1, even in view of Fuller. Claims 2-12 depend from claim 1 and are allowable for at least the same reasons. Withdrawal of the rejection is respectfully requested. Applicant does not otherwise concede the correctness of the rejection and reserves the right to make additional arguments if necessary.

Conclusion

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: __October 12, 2020_____

__/Julie K. Skoge/_____
Julie K. Skoge
Reg. No. 63,431

142510
PATENT TRADEMARK OFFICE

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A fiber optic enclosure comprising:

a ~~housing~~ wall mountable enclosure arrangement including a base, sidewalls that project forwardly from the base, and a cover ~~at a front of the housing~~, the sidewalls defining an access opening and defining a cable opening separate from the access opening, the cover being ~~movable~~ pivotal relative to the base about a pivot axis between an open position providing access to the access opening and a closed position covering the access opening, the cover contacting the sidewalls when disposed in the closed position;

the housing defining a cable opening for routing a first cable into the housing;

a spool mountable to the housing and positionable within the housing;

a second fiber optic cable spooled about a spooling portion of the spool, the second fiber optic cable including at least one optical fiber;

a fiber optic connector coupled to the at least one optical fiber of the second fiber optic cable;

a fiber optic adapter spaced inwardly from the sidewalls, the fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port;

the second fiber optic cable being payable from the spool while the spool is mounted to the housing, wherein the spool rotates relative to the housing about an axis of rotation as the second fiber optic cable is paid out from the spool, and wherein the fiber optic connector rotates in concert with the spool as the fiber optic cable is paid out from the spool; and

wherein access for plugging a connectorized end of the first cable into the second connector port of the fiber optic adapter while the fiber optic adapter is spaced inwardly from the sidewalls is: a) available from the front of the housing when the cover is in the open position; and b) not available from the front of the housing when the cover is in the closed position.

2. (Original) The fiber optic enclosure of claim 1, further comprising a hinge for allowing the cover to pivot between the open and closed positions.

3. (Previously Presented) The fiber optic enclosure of claim 1, wherein the fiber optic connector is supported on the spool when the second fiber optic cable is paid out from the spool.

4. (Previously Presented) The fiber optic enclosure of claim 1, wherein the fiber optic adapter is coupled to the fiber optic connector, and wherein the fiber optic adapter rotates in concert with the spool as the second fiber optic cable is paid out from the spool.

5. (Previously Presented) The fiber optic enclosure of claim 1, wherein the second fiber optic cable includes a plurality of optical fibers, wherein a plurality of fiber optic connectors terminate the plurality of optical fibers of the second fiber optic cable, wherein the fiber optic connectors rotate in concert with the spool as the second fiber optic cable is paid out from the spool, wherein the fiber optic enclosure further includes a plurality of fiber optic adapters, wherein the plurality of fiber optic connectors are secured within the plurality of fiber optic adapters when the second fiber optic cable is paid out from the spool.

6. (Original) The fiber optic enclosure of claim 1, wherein a cable seal is provided at the cable opening.

7. (Original) The fiber optic enclosure of claim 1, further comprising a cable manager for storing slack cable in a loop within the housing at a location separate from the spooling portion of the spool.

8. (Original) The fiber optic enclosure of claim 7, wherein the cable manager is positioned such that the loop is not co-axial with the axis of rotation of the spool.

9. (Original) The fiber optic enclosure of claim 7, wherein the cable manager includes a curved guide surface.

10. (Original) The fiber optic enclosure of claim 9, wherein the cable manager is configured for storing the slack cable in a coil.

11. (Original) The fiber optic enclosure of claim 9, wherein the cable manager includes a slack storage spool which defines the curved guide surface.

12. (Original) The fiber optic enclosure of claim 1, further comprising means for storing slack cable in a coil within the housing.

13. (Original) A fiber optic enclosure comprising:

a housing including a front and a back, the housing including a front cover movable between an open position and a closed position, the housing including sides that extend between the front and the back;

the housing defining a cable opening through one of the sides of the housing;

a spool mountable within the housing;

a fiber optic cable coiled about a spooling portion of the spool, the fiber optic cable including at least one optical fiber;

a fiber optic connector coupled to the at least one optical fiber of the fiber optic cable;

a fiber optic adapter positioned within the housing, the fiber optic adapter including a first connector port receiving the fiber optic connector and also including an opposite second connector port, the front cover preventing the first and second connector ports of the fiber optic adapter from being accessed from the front of the housing when in the closed position, and the front cover allowing the first and second connector ports of the fiber optic adapter to be accessed from the front of the housing when in the open position;

the fiber optic cable being payable from the spool while the spool is positioned within the housing, wherein the spool rotates relative to the housing about an axis of rotation as the fiber

optic cable is paid out from the spool, and wherein the fiber optic connector and the fiber optic adapter rotate in concert with the spool as the fiber optic cable is paid out from the spool; and

a cable routing path for routing a subscriber cable to the second connector port of the fiber optic adapter, the cable routing path extending within the housing from the cable opening to the second connector port of the fiber optic adapter, at least a portion of the cable routing path being located between a rear side of the front cover and a front axial end of the spool when the front cover is in the closed position.

14. (Original) The fiber optic enclosure of claim 13, wherein the sides of the housing include first and second opposite sides, wherein the front cover is hingedly coupled to the first side of the housing, wherein the cable opening is located at the second side of the housing, and wherein the spool mounts at a spool mounting location within the housing where the spool is closer to the first side than the second side.

15. (Original) The fiber optic enclosure of claim 13, wherein the front cover is coupled to a main portion of the housing by a hinge.

16. (Original) The fiber optic enclosure of claim 13, wherein the fiber optic connector is supported on the spool when the fiber optic cable is paid out from the spool.

17. (Original) The fiber optic enclosure of claim 13, wherein the fiber optic adapter is coupled to the fiber optic connector.

18. (Original) The fiber optic enclosure of claim 13, wherein the fiber optic cable includes a plurality of optical fibers, wherein a plurality of fiber optic connectors terminate the plurality of optical fibers at the first end of the fiber optic cable, wherein the fiber optic connectors rotate in concert with the spool as the fiber optic cable is paid out from the spool, wherein the telecommunications enclosure further includes a plurality of fiber optic adapters, and wherein the

plurality of fiber optic connectors are secured within the plurality of fiber optic adapters when the fiber optic cable is paid out from the spool.

19. (Original) The fiber optic enclosure of claim 13, further comprising a manual lock configured to lock the spool with varying amounts of the fiber optic cable paid off the spool, the manual lock being lockable without moving the fiber optic adapter relative to the spool.

20. (Original) The fiber optic enclosure of claim 19, wherein the spool defines apertures through which a pin can be inserted to lock the spool to the housing.

21. (Previously Presented) The fiber optic enclosure of claim 9, wherein the curved guide surface includes a finger extend laterally from the curved guide surface to assist in retention of the slack cable.

22. (Previously Presented) A fiber optic enclosure comprising:

a wall mountable enclosure arrangement including a base, sidewalls that project forwardly from the base, and a cover, the sidewalls defining an access opening and defining a cable opening separate from the access opening, the cover being pivotal relative to the base about a pivot axis between a closed position covering the access opening and an open position providing access to the access opening, the cover contacting the sidewalls when disposed in the closed position;

a cable spool mounted to the enclosure arrangement so that the cable spool is rotatable relative to the enclosure arrangement about a rotation axis that is transverse to the pivot axis, the cable spool including a spooling portion;

a fiber optic cable spooled about the spooling portion of the cable spool, the fiber optic cable including at least one optical fiber;

a fiber optic connector terminating the at least one optical fiber of the fiber optic cable, the fiber optic connector rotating in unison with the cable spool when the cable spool rotates about the rotation axis; and

a fiber optic adapter carried by the base of the enclosure arrangement, the fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port;

the cover extends across the fiber optic adapter when disposed in the closed position.

23. (Previously Presented) The fiber optic enclosure of claim 22, wherein the cable spool is disposed between the base and the cover when the cover is in the closed position.

24. (Previously Presented) The fiber optic enclosure of claim 22, wherein the sidewalls are devoid of openings suitable for mounting the fiber optic adapter.

25. (Previously Presented) The fiber optic enclosure of claim 22, wherein a cable seal is disposed at the cable opening for enabling a cable to be routed into the enclosure arrangement.

26. (Previously Presented) The fiber optic enclosure of claim 22, wherein the cable spool carries a cable management structure so that the cable management structure rotates in unison with the cable spool when the cable spool rotates relative to the enclosure arrangement.

27. (Previously Presented) The fiber optic enclosure of claim 26, wherein the cable management structure is configured for storing slack length of the fiber optic cable in a coil.

28. (Previously Presented) The fiber optic enclosure of claim 26, wherein the cable management structure includes a curved guide wall.

29. (Previously Presented) The fiber optic enclosure of claim 22, wherein a hinge is coupled to one of the sidewalls and to the cover to define the pivot axis.

30. (Previously Presented) The fiber optic enclosure of claim 29, wherein the hinge is located at a first side of the enclosure arrangement, wherein the cable opening is defined at a

second side of the enclosure arrangement, and wherein a corner is defined between the first side of the enclosure arrangement and the second side of the enclosure arrangement.

31. (Previously Presented) The fiber optic enclosure of claim 22, wherein the base defines a plurality of rear fastener openings for use in securing the enclosure arrangement at an installation surface.

32. (Previously Presented) The fiber optic enclosure of claim 22, wherein the base and the sidewalls at least partially surround the cable spool.

33. (Previously Presented) The fiber optic enclosure of claim 22, wherein the cable spool is mounted to the base so that the rotation axis extends through the access opening and intersects the cover when the cover is disposed in the closed position.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Kowalczyk et al.	Examiner:	Ullah, Akm E
Application No.:	15/875,564	Group Art Unit:	2874
Filed:	January 19, 2018	Docket No.:	02316.2584US22/ADC003176
Title:	Fiber Optic Enclosure with Internal Cable Spool and Movable Cover (as amended)		

Filed via EFS-Web

AMENDMENT WITH REQUEST FOR CONTINUED EXAMINATION

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

In response to the Final Office Action mailed July 10, 2020 and further to the Request for Continued Examination being filed herewith, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims that begins on page 2 of this paper.

Remarks begin on page 9 of this paper.

Electronic Patent Application Fee Transmittal

Application Number:	15875564
Filing Date:	19-Jan-2018
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Filer:	Julie Katherine Skoge/Rebecca Krueger
Attorney Docket Number:	02316.2584US22/ADC003176

Filed as Large 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:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	2000	2000
		Total in USD ($)		**2000**

Electronic Acknowledgement Receipt

EFS ID:	40820328
Application Number:	15875564
International Application Number:	
Confirmation Number:	6390
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Customer Number:	142510
Filer:	Julie Katherine Skoge/Rebecca Krueger
Filer Authorized By:	Julie Katherine Skoge
Attorney Docket Number:	02316.2584US22/ADC003176
Receipt Date:	12-OCT-2020
Filing Date:	19-JAN-2018
Time Stamp:	17:08:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2000
RAM confirmation Number	E20200BH08558935
Deposit Account	132725
Authorized User	Rebecca Krueger

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

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	2020-10-12-RCE.pdf	1349951 0bbc83b77f494585304e9c77e5e1d53c7bc1cb8e	no	3
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	2020-10-12-IDS.pdf	1035069 684694d07ffc4c557abf67f4bdd601345dd30fb5	no	5
Warnings:					
Information:					
3		2020-10-12-Amendment-w-RCE.pdf	291527 571ae38b4bcac139074d8ad3361fef2c4c0aa88d	yes	12

Multipart Description/PDF files in .zip description

Document Description	Start	End
Applicant Arguments/Remarks Made in an Amendment	9	12
Claims	2	8
Amendment Submitted/Entered with Filing of CPA/RCE	1	1

Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30904 289a8135a01159870d611d533499004d5fb1d53c	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	2707451	

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.

New Applications Under 35 U.S.C. 111

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.

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

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.

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15875564	Filing Date	2018-01-19	Docket Number (if applicable)	02316.2584US22	Art Unit	2874
First Named Inventor	Kowalczyk et al.			Examiner Name	Ullah, Akm E		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 132725

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

IPR2025-01119
Belden EX1005

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

Signature of Registered U.S. Patent Practitioner			
Signature	/Julie K. Skoge/	Date (YYYY-MM-DD)	2020-10-12
Name	Julie K. Skoge	Registration Number	63431

This collection of information is required by 37 CFR 1.114. 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 12 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, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IPR2025-01119
Belden EX1005

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.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/875,564	Filing Date 01/19/2018	☐ To be Mailed

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 $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ 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)			
AMENDMENT	10/12/2020	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 33	Minus	** 33	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ 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".	/LAVINIA D JOHNSON/
*** 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 number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 12 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, 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.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

142510 7590 07/10/2020

M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

EXAMINER	
ULLAH, AKM E	

ART UNIT	PAPER NUMBER
2874	

NOTIFICATION DATE	DELIVERY MODE
07/10/2020	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):

uspto142510@merchantgould.com

Office Action Summary	Application No. 15/875,564	Applicant(s) Kowalczyk et al.	
	Examiner Akm E Ullah	Art Unit 2874	AIA (FITF) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 03/26/2020.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ 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.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-33 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☑ Claim(s) 13-33 is/are allowed.

7) ☑ Claim(s) 1-12 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, 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.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ 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)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

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

Detailed Action

Applicant cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Status of the Application

Parent Data:

This instant US application serial number 15/875,564, filed 01/19/2018 and having 1 RCE-type filing, which is a continuation of 15470311, filed 03/27/2017 and having 1 RCE-type filing therein 15470311 which is a continuation of 14979870, filed 12/28/2015 ,now U.S. Patent #9606319 and having 1 RCE-type filing which is a continuation of 14539459, filed 11/12/2014 ,now U.S. Patent #9261666 which is a continuation of 14132691, filed 12/18/2013 ,now U.S. Patent #8891931, which is a continuation of 13924191, filed 06/21/2013 ,now U.S. Patent #8705929 which is a continuation of 13479015, filed 05/23/2012 ,now U.S. Patent #8494333 which is a continuation of 13032337, filed 02/22/2011 ,now U.S. Patent #8189984 and having 2 RCE-type fillings which is a continuation of 12793556, filed 06/03/2010 ,now U.S. Patent #7894701, which is a continuation of 12182705,filed 07/30/2008 ,now U.S. Patent #7756379 and having 1 RCE-type filing, which is Claims Priority from Provisional Application 61029248, filed 02/15/2008, which claims Priority from Provisional Application 60954214, filed 08/06/2007.

No Child Data

Claims 1- 33 are pending in this application.

Claims 1- 12 are rejected over the prior art.

Claims 13 - 20 and 21- 33 (newly added) are allowed over the prior art.

Claims 21- 33 are newly added by applicant dated March 06, 2020.

Notice re prior art available under both Pre-AIA and AIA

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly

owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

Claims 1- 12 are rejected under 35 U.S.C. 103 as being unpatentable over Kowalczyk et al. (USPNO. 7,715,679).

Regarding claim 1, Kowalczyk et al disclose a fiber optic telecommunications device includes an enclosure defining an interior. A first fiber optic adapter is provided at the enclosure. A spool is provided at an exterior of the enclosure. A fiber optic cable, which includes a first optical fiber, is wrapped around the spool. A first fiber optic connector is mounted at a first end of the first optical fiber. The first end of the first optical fiber is positioned within the interior of the enclosure. The first fiber optic connector is inserted within the first fiber optic adapter. The enclosure and the spool are configured to rotate in unison about a common axis when the fiber optic cable is unwound from the spool.

The fiber optic enclosure includes an enclosure, a cable spool assembly disposed on an exterior surface of the enclosure, and a mounting assembly. The mounting assembly is rotationally engaged with the cable spool assembly such that the cable spool assembly selectively rotates about an axis of the mounting assembly.

Another aspect of the present disclosure relates to a fiber optic telecommunications device having a first fiber optic adapter, a spool, and a fiber optic cable wrapped around the spool. The fiber optic cable includes a first optical fiber. A first fiber optic connector is mounted at a first end of the first optical fiber. The first end of the

first fiber optic connector is inserted within the first fiber optic adapter. The first fiber optic adapter and the spool is configured to rotate in unison about a common axis when the fiber optic cable is unwound from the spool.

The telecommunications equipment further includes an optical cable wrapped around the spool. The optical cable includes a first optical fiber having a first end and a second end. The first end of the first optical fiber is connectorized. The method further includes rotating the fiber optic adapter and the spool in unison about a common axis to pay out the optical cable from the spool so that the second end of the first optical fiber can be positioned at a remote location that is remote from the fiber optic adapter and the spool.

Regarding claim 2, further comprising a hinge (figure 6, numeral 79 and figure 20 wherein first portion 655 and second portion 656 are engaged by a hinge) for allowing the cover (27/225/425) to pivot between the open and closed positions.

See figures 2, 2A, 10 and 15-19

Regarding claim 3, wherein the fiber optic connector is supported on the spool when the fiber optic cable is paid out from the spool. **See lines column 1, 55 - 66 of the reference.**

Regarding claim 4, wherein the fiber optic adapter is coupled to the fiber optic connector, and wherein the fiber optic adapter rotates in concert with the spool as the fiber optic cable is paid out from the spool.

See lines column 1, 55 - 66 of the reference.

5. The fiber optic enclosure of claim 1, wherein the fiber optic cable includes a plurality of optical fibers, wherein a plurality of fiber optic connectors terminate the plurality of optical fibers at the first end of the fiber optic cable, wherein the fiber optic connectors rotate in concert with the spool as the fiber optic cable is paid out from the spool, wherein the telecommunications enclosure further includes a plurality of fiber optic adapters, wherein the plurality of fiber optic connectors are secured within the plurality of fiber optic adapters when the fiber optic cable is paid out from the spool.

Regarding claim 6, wherein a cable seal is provided at the cable opening.

Official Notice is taken that utilizing a cable seal is provided at the cable opening arranged for the fiber optic enclosure is old and well known in the art. See In Re Malcolm 1942 C.D. 589:543 O.G. 440 MPEP 706.02 (a).

Therefore, it would haven obvious to one of ordinary skill in the art at the time of the invention was made to use the teachings of the Kowalczyk et al. for having a cable seal at the cable opening in the fiber optic enclosure.

Regarding claim 7, further comprising a cable manager for storing slack cable (249 and 657) in a loop within the housing at a location separate from the spooling portion of the spool.

Regarding claim 8, wherein the cable manager is positioned such that the loop is not co-axial with the axis of rotation of the spool.

Regarding claim 9, wherein the cable manager includes a curved guide surface.

Regarding claim 10, wherein the cable manager is configured for storing the slack cable in a coil. This is an inherent teachings of the Kowalczyk et al. reference.

Regarding claim 11, wherein the cable manager includes a slack storage spool which defines the curved guide surface.

In reference to claims 7 - 9 and 11, see figures 11 & 20 of Kowalczyk et al. reference.

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the claimed invention to modify the invention of Kowalczyk et al. wherein access for plugging a connectorized end of the subscriber cable into the housing when the cover is in the open position and (b) not available from the front of the housing when the cover is in the closed position since, a fiber optic enclosure assembly having a mounting plate, an enclosure and a cable spool exteriorly disposed on the enclosure, the enclosure and the cable spool being rotatably engaged to the mounting plate, the enclosure being adapted to optically connect incoming fibers of a first cable and outgoing fibers of a second cable, wherein the first cable is disposed about the cable spool; mounting the mounting plate to a vertical structure; and rotating the enclosure and the cable spool about an axis of the mounting plate until a desired length of the first cable is paid out.

Claims 1- 12 are rejected under 35 U.S.C. 103 as being unpatentable over Walters (USPNO. 6,220,413) in view of Fuller et al. (6,933,441).

Walters discloses a fiber optic enclosure assembly for enclosing optical fiber connections (figures 5, column 1, and lines 23 - 31) comprising:

A housing/frame (27) having an interior region; a bearing mount (41) disposed in the interior region; housing (27) includes a base (29) and a cover (33) and sidewalls (31) with an access port (35) and/or passage of the fiber optic cable (23).

A bearing mount (41) disposed in the interior region of the housing;

A cable spool (11) engaged with the bearing mount such that the cable spool (11) selectively rotates within the housing (column 2, lines 41- 47); and

A termination module (47), disposed on the cable spool (11) so that the termination module rotates in unison with the cable spool (column 2, lines 53-54).

The rotation of reel (11) allows the first portion of the cable (23) to be paid out from the interior of the housing (27) through the access port (35). It also disclose that the reel (11) is for storing and extending the fiber optic cable (23) that can be wrapped around the reel. The storage area can be located adjacent access port (35) for storing a pulling eye of the cable (23). When the connector panel (53) is placed in the position as shown in figure 5 of Walters's reference, the reel (11) can be rotated to extend or retract cable (23).

Walters disclose the end of cable 23 with individual fibers 61 being secured to connector panel 53 (see figure 5). The second of the cable 23 extends from the spool (11) and can be stored in the storage area (36).

Walter disclose a fiber optic adapter (see paragraph 58 - 61) i.e., connector sleeve (55) positioned within the interior of the housing (27) and coupled to the spool/reel (11), the connector sleeve (55) being together in particular form in order to couple to the end of an optical fiber (61) of the fiber optic cable (23) to an end of an

optical fiber of a subscriber cable (i.e., a male plug connector on the end of a fiber optic line (59) while the connector sleeve (55) is mounted in the spool/reel (11).

Each connector sleeve (55) is to receive a male plug connector of the optical fibers (61) at the first end of the fiber optic cable (23) and the male plug connector on the end of a fiber optic line (59) to optically couple the fibers. The inner side, each receptacle of the connector sleeves (55) is adapted to receive male plug connectors on the ends of fibers (61) from the fiber optic cable (23) that is wrapped around the reel (11).

Walter disclose the fiber optic cable (23) is wrapped around a perimeter wall (19) of the spool/reel (11). See column 2, lines 14 - 23.

Walter (figures 5 & 6) includes two docking station with a connector panel (53) can be alternatively engaged: a frame docking station (43) on one of the frame's sidewalls (31) such that the connector panel rotates (47) that can be mounted to the hub (13) such that connector panel rotates with the reel (11).

The connector panel (53) comprises a flat having a plurality of fiber optic connector sleeves (55) mounted to it and two quick release fasteners (57) that can releasably engage holes (45) in the frame docking station (43) in figure 5, holes (51) of the docking station (47) in figure 6.

Walter also disclose a fiber optic adapter (connector sleeve numeral 55) since it couples the fibers (59) and fiber (61).

Walters fails to explicitly disclose/mention the cover is movable in order to selectively cover and uncover the opening in the housing (27).

Fuller disclose a telecommunications and data transmission fiber optic cable storage enclosure for maximum internal volume therein for housing a cable storage reel in the enclosure (13) comprising a rectangular box enclosure and a cover which can slid back to expose the internal mechanism and can secured to the enclosure (13) in order to permit to open the interior of the enclosure (13).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the claimed invention to use the teachings of Fuller reference in Walters since, it is therefore an important object of the present invention **to provide** a new and improved telecommunication cable reel storage enclosure which meets the existing design criteria for a specific size and configuration of the enclosure for a predetermined length of cable for permanent installation, or emergency use, **to provide** a cable reel enclosure which fits in a standard bank/rack of pre-existing cable reel enclosures and dispense and retract fiber optic cable from and onto a reel with jam free operation during cable extraction and retraction, and **to provide** an enclosure for a cable reel which has a brake on the reel during cable extraction which prevents the wound cable from loosening on the reel when extraction tension on the cable is released (s**ee under objects of the invention in Fuller reference**) .

EXAMINERS NOTE:

A reference to specific paragraphs, columns, pages, or figures in a cited prior art reference is not limited to preferred embodiments or any specific examples. It is well settled that a prior art reference, in its entirety, must be considered for all that it expressly teaches and fairly suggests to one having ordinary skill in the art. Stated differently, a prior art disclosure reading on a limitation of Applicant's

claim cannot be ignored on the ground that other embodiments disclosed were instead cited. Therefore, the Examiner's citation to a specific portion of a single prior art reference is not intended to exclusively dictate, but rather, to demonstrate an exemplary disclosure commensurate with the specific limitations being addressed. In re Heck, 699 F.2d 1331, 1332-33,216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting In re Lemelson, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)). In re: Upsher-Smith Labs. v. Pamlab, LLC, 412 F.3d 1319, 1323, 75 USPQ2d 1213, 1215 (Fed. Cir. 2005); In re Fritch, 972 F.2d 1260, 1264, 23 USPQ2d 1780, 1782 (Fed. Cir. 1992); Merck & Co. v. Biocraft Labs., Inc., 874 F.2d 804,807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989); In re Fracalossi, 681 F.2d 792,794 n.1,215 USPQ 569, 570 n.1 (CCPA 1982); In re Lamberti, 545 F.2d 747, 750, 192 USPQ 278,280 (CCPA 1976); In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

Argument Are Not Persuasive

Applicant's arguments filed March 26, 2020 have been fully considered but they are not persuasive.

Applicant argues that

The rejection of claims 1-12 are rejected under 35 USC 103 as being unpatentable over Kowalczyk USP NO. 7,715,679) is disqualified as a prior art.

Kowalczyk et al qualify as prior art under 35 U.S.C since it has priority to US Provisional application filed on May 07, 2007. **Thus, the rejection is proper.**

Applicant argues that "The combination of Walters and Fuller does not disclose or suggest that access for plugging a connectorized end of the first cable into the second connector port of the fiber optic adapter is: a) available from the front of the housing when the cover is in the open position; and b) not available from the front of the housing when the cover is in the closed position in combination with the other features recited in amended claim 1."

Examiner respectfully disagree:

Examiner has met all requirements establishing a *prima facie* case: all factual findings required by *Graham* were supplied in the previous and present Actions; the references are related art, and Applicant has supplied no evidence that there is no reasonable expectation of success; all claim limitations were met in the previous and present Actions, and Applicant has merely made the allegation that the limitations are not met, and thus has not provided any evidence or argument directed to how the identified elements in the first action fail to meet the claimed limitations or to how the identified elements are otherwise distinguishable from the claimed limitations. Neither has Applicant supplied any evidence or argument addressing any failure of Examiner's application of the TSM test, pursuant to current governing law (see *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007)).

Applicant argues that

" Modifying the cover of Walters to remove the opening and to be movable as taught by Fuller still would not result in the claimed invention. Even if the opening were removed, the connector panel 53 would still be accessible from the front of the housing when the cover was closed when the connector panel 53 was disposed at the frame docking station 43. Further, removing the opening from the cover of Walters would destroy the functionality of Walters because the fibers 61 could not reach the connector panel 53 at the frame docking station 43. For at least these reasons, Walters would not lead a person skilled in the art to the invention of claim 1, even in view of Fuller."

Examiner respectfully disagree:
In response to applicant's arguments that one of ordinary skill would not be motivated to combine the teachings of Walter in view of Fuller because Walters reference would destroy the functionality of Walter reference. The fact that applicant has recognized the opening of Walter reference can open and removed, the connector panel 53 would be accessible from the front of the housing.

See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter, 1985). Thus, the use modifying the cover of Walters to remove the opening and to be movable as taught by Fuller would result the instant claimed invention

Applicant argues that

Claims 2-12 depend from claim 1 and are allowable for at least the same reasons. Withdrawal of the rejection is respectfully requested. Applicant does not otherwise concede the correctness of the rejection and reserves the right to make additional arguments if necessary.

Examiner respectfully disagree:

Applicant failed to address the limitations of claims 2-12. The limitations of 2-12 has been addressed in last office action dated 11/26/ 2019 in Fuller in view of Walters. Thus, this action is made final.

Action Is Final

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akm Enayet Ullah whose telephone number is 571-272-2361. The examiner can normally be reached on Monday through Thursday from 6:30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le, can be reached on 571-272-2397. 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 http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/AKM E ULLAH/
Primary Examiner, Art Unit 2874

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	Akm E Ullah	2874

CPC - Searched*		
Symbol	Date	Examiner
G02B6/46, 445, 4457, 4441, 4446, 4471, 3897, 4452, 4453, 4454	05/02/2019	AU
Updated above	11/20/2019	AU
Updated above	07/06/2020	AU

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
385	135	05/02/2019	AU

* 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
EAST, ASSIGNEE and INVENTOR	05/02/2019	AU
Updated above	11/20/2019	AU
Updated above	07/06/2020	AU

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
G02B	6/$ and Text limited search	05/02/2019	AU

/AKM E ULLAH/ Primary Examiner, Art Unit 2874	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	Akm E Ullah	2874

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

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

CLAIM		DATE								
Final	Original	05/02/2019	11/20/2019	07/06/2020						
	1	=	✓	✓						
	2	=	✓	✓						
	3	=	✓	✓						
	4	=	✓	✓						
	5	=	✓	✓						
	6	=	✓	✓						
	7	=	✓	✓						
	8	=	✓	✓						
	9	=	✓	✓						
	10	=	✓	✓						
	11	=	✓	✓						
	12	=	✓	✓						
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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
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15875564
Filing Date	2018-01-19
First Named Inventor	Scott C. Kowalczyk
Art Unit	2874
Examiner Name	Ullah, Akm E.
Attorney Docket Number	02316.2584US22/ADC003176

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5069523		1991-12-03	Finzel et al.	
	2	6702077	B2	2004-03-09	Skowronski	
	3	6795633	B2	2004-09-21	Joseph, II	
	4	6889701	B2	2005-05-10	Kovacik et al.	
	5	7120349	B2	2006-10-10	Elliott	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15875564
Filing Date	2018-01-19
First Named Inventor	Scott C. Kowalczyk
Art Unit	2874
Examiner Name	Ullah, Akm E.
Attorney Docket Number	02316.2584US22/ADC003176

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature	/AKM E ULLAH/	Date Considered	07/06/2020

*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	15875564
	Filing Date	2018-01-19
	First Named Inventor	Scott C. Kowalczyk
	Art Unit	2874
	Examiner Name	Ullah, Akm E.
	Attorney Docket Number	02316.2584US22/ADC003176

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	/Julie K. Skoge/	Date (YYYY-MM-DD)	2020-03-26
Name/Print	Julie K. Skoge	Registration Number	63,431

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.**

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 record s.

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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.E.B./
IPR2025-01119
Belden EX1005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Kowalczyk et al.	Examiner:	Ullah, Akm E
Application No.:	15/875,564	Group Art Unit:	2874
Filed:	January 19, 2018	Docket No.:	02316.2584US22/ADC003176
Title:	Fiber Optic Enclosure with Internal Cable Spool and Movable Cover (as amended)		

Filed via EFS-Web

INTERVIEW SUMMARY

A telephone interview was held on November 20, 2019 between Examiner Akm E. Ullah and Applicant's representative, Julie Skoge (Reg. No. 63,431). In the interview, differences between claims 1-20 and U.S. Patent No. 7,715,679 were discussed.

Please charge any additional fees (including fees for extensions of time) or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
(612) 332-5300

Dated: May 26, 2020

/Julie K. Skoge/
Julie K. Skoge
Reg. No. 63,431
JKS:rlk

Electronic Acknowledgement Receipt

EFS ID:	39536253
Application Number:	15875564
International Application Number:	
Confirmation Number:	6390
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Customer Number:	142510
Filer:	Julie Katherine Skoge/Rebecca Krueger
Filer Authorized By:	Julie Katherine Skoge
Attorney Docket Number:	02316.2584US22/ADC003176
Receipt Date:	26-MAY-2020
Filing Date:	19-JAN-2018
Time Stamp:	15:12:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant summary of interview with examiner	2020-05-26-Interview-Summary.PDF	72703 f839f4ee8a9bf06f7de437934aeea03c0960f856	no	1

Warnings:

Information:	
Total Files Size (in bytes):	72703

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New Applications Under 35 U.S.C. 111

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.

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

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.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/875,564	Filing Date 01/19/2018	☐ To be Mailed

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 $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ 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)			
AMENDMENT	03/26/2020	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 33	Minus	** 20	= 13		x $100 =	1300
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	1300

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ 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".	/RENEE D HAWKINS/
*** 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 number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 12 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, 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.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Kowalczyk et al.	Examiner:	Ullah, Akm E
Application No.:	15/875,564	Group Art Unit:	2874
Filed:	January 19, 2018	Docket No.:	02316.2584US22/ADC003176
Title:	Fiber Optic Enclosure with Internal Cable Spool and Movable Cover (as amended)		

Filed via EFS-Web

AMENDMENT AND RESPONSE

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

In response to the Office Action mailed November 26, 2019, please amend the above-identified application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims that begins on page 3 of this paper.

Remarks begin on page 10 of this paper.

Amendments to the Specification:

Please replace the title with the following amended title:

FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL AND MOVABLE COVER

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Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A fiber optic enclosure comprising:

a housing including a cover at a front of the housing, the cover being movable between an open position and a closed position;

the housing defining a cable opening for routing a first ~~subscriber~~ cable into the housing;

a spool mountable to the housing and positionable within the housing;

a second fiber optic cable spooled about a spooling portion of the spool, the second fiber optic cable including at least one optical fiber;

a fiber optic connector coupled to the at least one optical fiber of the second fiber optic cable;

a fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port;

the second fiber optic cable being payable from the spool while the spool is mounted to the housing, wherein the spool rotates relative to the housing about an axis of rotation as the second fiber optic cable is paid out from the spool, and wherein the fiber optic connector rotates in concert with the spool as the fiber optic cable is paid out from the spool; and

wherein access for plugging a connectorized end of the ~~subscriber~~ first cable into the second connector port of the fiber optic adapter is: a) available from the front of the housing when the cover is in the open position; and b) not available from the front of the housing when the cover is in the closed position.

2. (Original) The fiber optic enclosure of claim 1, further comprising a hinge for allowing the cover to pivot between the open and closed positions.

3. (Currently Amended) The fiber optic enclosure of claim 1, wherein the fiber optic connector is supported on the spool when the second fiber optic cable is paid out from the spool.

4. (Currently Amended) The fiber optic enclosure of claim 1, wherein the fiber optic adapter is coupled to the fiber optic connector, and wherein the fiber optic adapter rotates in concert with the spool as the second fiber optic cable is paid out from the spool.

5. (Currently Amended) The fiber optic enclosure of claim 1, wherein the second fiber optic cable includes a plurality of optical fibers, wherein a plurality of fiber optic connectors terminate the plurality of optical fibers ~~at the first end~~ of the second fiber optic cable, wherein the fiber optic connectors rotate in concert with the spool as the second fiber optic cable is paid out from the spool, wherein the ~~telecommunications~~ fiber optic enclosure further includes a plurality of fiber optic adapters, wherein the plurality of fiber optic connectors are secured within the plurality of fiber optic adapters when the second fiber optic cable is paid out from the spool.

6. (Original) The fiber optic enclosure of claim 1, wherein a cable seal is provided at the cable opening.

7. (Original) The fiber optic enclosure of claim 1, further comprising a cable manager for storing slack cable in a loop within the housing at a location separate from the spooling portion of the spool.

8. (Original) The fiber optic enclosure of claim 7, wherein the cable manager is positioned such that the loop is not co-axial with the axis of rotation of the spool.

9. (Original) The fiber optic enclosure of claim 7, wherein the cable manager includes a curved guide surface.

10. (Original) The fiber optic enclosure of claim 9, wherein the cable manager is configured for storing the slack cable in a coil.

11. (Original) The fiber optic enclosure of claim 9, wherein the cable manager includes a slack storage spool which defines the curved guide surface.

12. (Original) The fiber optic enclosure of claim 1, further comprising means for storing slack cable in a coil within the housing.

13. (Original) A fiber optic enclosure comprising:

a housing including a front and a back, the housing including a front cover movable between an open position and a closed position, the housing including sides that extend between the front and the back;

the housing defining a cable opening through one of the sides of the housing;

a spool mountable within the housing;

a fiber optic cable coiled about a spooling portion of the spool, the fiber optic cable including at least one optical fiber;

a fiber optic connector coupled to the at least one optical fiber of the fiber optic cable;

a fiber optic adapter positioned within the housing, the fiber optic adapter including a first connector port receiving the fiber optic connector and also including an opposite second connector port, the front cover preventing the first and second connector ports of the fiber optic adapter from being accessed from the front of the housing when in the closed position, and the front cover allowing the first and second connector ports of the fiber optic adapter to be accessed from the front of the housing when in the open position;

the fiber optic cable being payable from the spool while the spool is positioned within the housing, wherein the spool rotates relative to the housing about an axis of rotation as the fiber optic cable is paid out from the spool, and wherein the fiber optic connector and the fiber optic adapter rotate in concert with the spool as the fiber optic cable is paid out from the spool; and

a cable routing path for routing a subscriber cable to the second connector port of the fiber optic adapter, the cable routing path extending within the housing from the cable opening to the second connector port of the fiber optic adapter, at least a portion of the cable routing path

being located between a rear side of the front cover and a front axial end of the spool when the front cover is in the closed position.

14. (Original) The fiber optic enclosure of claim 13, wherein the sides of the housing include first and second opposite sides, wherein the front cover is hingedly coupled to the first side of the housing, wherein the cable opening is located at the second side of the housing, and wherein the spool mounts at a spool mounting location within the housing where the spool is closer to the first side than the second side.

15. (Original) The fiber optic enclosure of claim 13, wherein the front cover is coupled to a main portion of the housing by a hinge.

16. (Original) The fiber optic enclosure of claim 13, wherein the fiber optic connector is supported on the spool when the fiber optic cable is paid out from the spool.

17. (Original) The fiber optic enclosure of claim 13, wherein the fiber optic adapter is coupled to the fiber optic connector.

18. (Original) The fiber optic enclosure of claim 13, wherein the fiber optic cable includes a plurality of optical fibers, wherein a plurality of fiber optic connectors terminate the plurality of optical fibers at the first end of the fiber optic cable, wherein the fiber optic connectors rotate in concert with the spool as the fiber optic cable is paid out from the spool, wherein the telecommunications enclosure further includes a plurality of fiber optic adapters, and wherein the plurality of fiber optic connectors are secured within the plurality of fiber optic adapters when the fiber optic cable is paid out from the spool.

19. (Original) The fiber optic enclosure of claim 13, further comprising a manual lock configured to lock the spool with varying amounts of the fiber optic cable paid off the spool, the manual lock being lockable without moving the fiber optic adapter relative to the spool.

20. (Original) The fiber optic enclosure of claim 19, wherein the spool defines apertures through which a pin can be inserted to lock the spool to the housing.

21. (NEW) The fiber optic enclosure of claim 9, wherein the curved guide surface includes a finger extend laterally from the curved guide surface to assist in retention of the slack cable.

22. (NEW) A fiber optic enclosure comprising:

a wall mountable enclosure arrangement including a base, sidewalls that project forwardly from the base, and a cover, the sidewalls defining an access opening and defining a cable opening separate from the access opening, the cover being pivotal relative to the base about a pivot axis between a closed position covering the access opening and an open position providing access to the access opening, the cover contacting the sidewalls when disposed in the closed position;

a cable spool mounted to the enclosure arrangement so that the cable spool is rotatable relative to the enclosure arrangement about a rotation axis that is transverse to the pivot axis, the cable spool including a spooling portion;

a fiber optic cable spooled about the spooling portion of the cable spool, the fiber optic cable including at least one optical fiber;

a fiber optic connector terminating the at least one optical fiber of the fiber optic cable, the fiber optic connector rotating in unison with the cable spool when the cable spool rotates about the rotation axis; and

a fiber optic adapter carried by the base of the enclosure arrangement, the fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port;

the cover extends across the fiber optic adapter when disposed in the closed position.

23. (NEW) The fiber optic enclosure of claim 22, wherein the cable spool is disposed between the base and the cover when the cover is in the closed position.

24. (NEW) The fiber optic enclosure of claim 22, wherein the sidewalls are devoid of openings suitable for mounting the fiber optic adapter.

25. (NEW) The fiber optic enclosure of claim 22, wherein a cable seal is disposed at the cable opening for enabling a cable to be routed into the enclosure arrangement.

26. (NEW) The fiber optic enclosure of claim 22, wherein the cable spool carries a cable management structure so that the cable management structure rotates in unison with the cable spool when the cable spool rotates relative to the enclosure arrangement.

27. (NEW) The fiber optic enclosure of claim 26, wherein the cable management structure is configured for storing slack length of the fiber optic cable in a coil.

28. (NEW) The fiber optic enclosure of claim 26, wherein the cable management structure includes a curved guide wall.

29. (NEW) The fiber optic enclosure of claim 22, wherein a hinge is coupled to one of the sidewalls and to the cover to define the pivot axis.

30. (NEW) The fiber optic enclosure of claim 29, wherein the hinge is located at a first side of the enclosure arrangement, wherein the cable opening is defined at a second side of the enclosure arrangement, and wherein a corner is defined between the first side of the enclosure arrangement and the second side of the enclosure arrangement.

31. (NEW) The fiber optic enclosure of claim 22, wherein the base defines a plurality of rear fastener openings for use in securing the enclosure arrangement at an installation surface.

32. (NEW) The fiber optic enclosure of claim 22, wherein the base and the sidewalls at least partially surround the cable spool.

33. (NEW) The fiber optic enclosure of claim 22, wherein the cable spool is mounted to the base so that the rotation axis extends through the access opening and intersects the cover when the cover is disposed in the closed position.

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REMARKS

This paper responds to the Office Action mailed November 26, 2019. Claims 1-20 remain pending in the application; claims 21-33 are newly added. Amendments are made to claims 1 and 3-5. A new title is submitted. Support for these changes can be found throughout the specification and figures. No new matter has been added.

Reexamination and allowance of the pending claims are respectfully requested.

Related Cases

As noted in the cross-reference paragraph on page 1 of the specification, this application is a continuation of application Serial No. 15/470,311, filed March 27, 2017, which is a continuation of application Serial No. 14/979,870, filed December 28, 2015, now U.S. Patent No. 9,606,319, which is a continuation of application Serial No. 14/539,459, filed November 12, 2014, now U.S. Patent No. 9,261,666, which is a continuation of application Serial No. 14/132,691, filed December 18, 2013, now U.S. Patent No. 8,891,931, which is a continuation of application Serial No. 13/924,191, filed June 21, 2013, now U.S. Patent No. 8,705,929, which is a continuation of application Serial No. 13/479,015, filed May 23, 2012, now U.S. Patent No. 8,494,333, which is a continuation of application Serial No. 13/032,337, filed February 22, 2011, now U.S. Patent No. 8,189,984, which is a continuation of application Serial No. 12/793,556, filed June 3, 2010, now U.S. Patent No. 7,894,701, which is a continuation of application Serial No. 12/182,705, filed July 30, 2008, now U.S. Patent No. 7,756,379, which application claims the benefit of provisional application Serial Nos. 61/029,248, filed February 15, 2008 and 60/954,214, filed August 6, 2007, which applications are incorporated herein by reference in their entirety.

In addition, the following applications also claim priority to U.S. Application No. 15/470,311:

- 15/875528, filed 01/19/2018, now US Patent No. 10234648
- 15/875620, filed 01/19/2018, now US Patent No. 10247897
- 15/875513, filed 01/19/2018
- 15/875605, filed 01/19/2018

- 16/153421, filed 10/05/2018, will be US Patent No. 10606015
- 16/185346, filed 11/09/2018, will be US Patent No. 10606017
- 16/195358, filed 11/19/2018, now US Patent No. 10495836

Finally,

Allowed Claims

Applicant thanks the Examiner for allowing claims 13-20.

Objections to the Title

Formal objection is made to the title. In response, Applicant submits a revised title above. Support for this change can be found throughout the specification and figures. No new matter has been added.

Withdrawal of the objection is respectfully requested.

Claim Rejections - § 103

- Claims 1-12 are rejected under 35 U.S.C. 103 as being unpatentable over U.S. Patent No. 7,715,679 to Kowalczyk et al. (hereinafter "Kowalczyk"). Applicant respectfully traverses the rejection.

At the time the claimed invention was made, the claimed invention and the subject matter of Kowalczyk were subject to an obligation of assignment to the same entity. Accordingly, Kowalczyk is disqualified as prior art under pre-AIA 35 U.S.C. 103(c). The provisional applications to which Kowalczyk claims the benefit of priority—including U.S. Application No. 60/916495—were subject to an obligation to assign to ADC Telecommunications, Inc. at the time the inventions thereof were made. The claimed invention also was subject to an obligation of assignment to ADC Telecommunications, Inc. at the time the claimed invention was made. The assignment of Kowalcyzk to ADC Telecommunications, Inc. is recorded at Reel 021443, Frame 0048. The assignment of the claimed invention to ADC Telecommunications, Inc. is recorded at Reel 021808, Frame 0812.

Withdrawal of the rejection is respectfully requested.

- Claims 1-12 are rejected under 35 U.S.C. 103 as being unpatentable over U.S. Patent No. 6,220,413 to Walters (hereinafter "Walters") in view of U.S. Patent No. 6,933,441 to Fuller et al. (hereinafter "Fuller"). Applicant respectfully traverses the rejection.

The combination of Walters and Fuller does not disclose or suggest that access for plugging a connectorized end of the first cable into the second connector port of the fiber optic adapter is: a) available from the front of the housing when the cover is in the open position; and b) not available from the front of the housing when the cover is in the closed position in combination with the other features recited in amended claim 1.

As noted on page 10 of the Office Action, Walters fails to disclose the cover being movable to selectively provide access for plugging a connectorized end of the first cable into the second connector port of the fiber optic adapter. In fact, the cover of Walters defines a large opening through which the connector panel 53 and reel docking station 47 are accessible. See Walters, FIG. 6 (reproduced below). When the connector panel 53 is moved from the reel docking station 47 to the frame docking station 43, the fibers 61 extend through the opening (see FIG. 6).

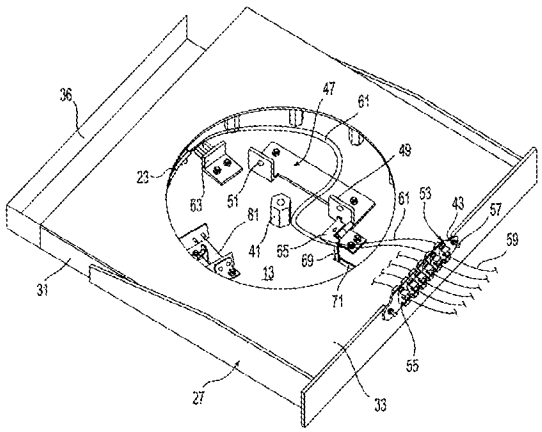


Fig. 6

Modifying the cover of Walters to remove the opening and to be movable as taught by Fuller still would not result in the claimed invention. Even if the opening were removed, the connector panel 53 would still be accessible from the front of the housing when the cover was closed when the connector panel 53 was disposed at the frame docking station 43. Further,

removing the opening from the cover of Walters would destroy the functionality of Walters because the fibers 61 could not reach the connector panel 53 at the frame docking station 43.

For at least these reasons, Walters would not lead a person skilled in the art to the invention of claim 1, even in view of Fuller. Claims 2-12 depend from claim 1 and are allowable for at least the same reasons. Withdrawal of the rejection is respectfully requested. Applicant does not otherwise concede the correctness of the rejection and reserves the right to make additional arguments if necessary.

New Claims

Claims 21-33 are newly added. To the extent that any of the above rejections apply to new claims 21-33, Applicant respectfully traverses the rejection.

None of the cited references discloses or suggests a cable spool mounted to and rotatable relative to an enclosure arrangement; and a cover being securable in a position in which the cover engages sidewalls of the enclosure arrangement and extends across a fiber optic adapter.

Rather, the cover of Walters defines a large opening aligned with the connector panel 53 when the connector panel 53 is disposed at the reel docking station 47. See Walters, FIG. 6 (reproduced below). The cover of Walters also does not extend over the connector panel 53 when the connector panel 53 is disposed at the frame docking station 43. Further, modifying Walters to remove the opening so that the cover extends across the connector panel 53 would destroy the functionality of Walters because the cover would then block the fibers 61 from reaching the connector panel 53 at the frame docking station 43.

Examination and allowance of new claims 21-33 are respectfully requested.

Conclusion

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: March 26, 2020

__/Julie K. Skoge/_____
Julie K. Skoge
Reg. No. 63,431

142510
PATENT TRADEMARK OFFICE

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15875564
Filing Date	2018-01-19
First Named Inventor	Scott C. Kowalczyk
Art Unit	2874
Examiner Name	Ullah, Akm E.
Attorney Docket Number	02316.2584US22/ADC003176

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5069523		1991-12-03	Finzel et al.	
	2	6702077	B2	2004-03-09	Skowronski	
	3	6795633	B2	2004-09-21	Joseph, II	
	4	6889701	B2	2005-05-10	Kovacik et al.	
	5	7120349	B2	2006-10-10	Elliott	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15875564
	Filing Date	2018-01-19
	First Named Inventor	Scott C. Kowalczyk
	Art Unit	2874
	Examiner Name	Ullah, Akm E.
	Attorney Docket Number	02316.2584US22/ADC003176

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*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	15875564
	Filing Date	2018-01-19
	First Named Inventor	Scott C. Kowalczyk
	Art Unit	2874
	Examiner Name	Ullah, Akm E.
	Attorney Docket Number	02316.2584US22/ADC003176

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	/Julie K. Skoge/	Date (YYYY-MM-DD)	2020-03-26
Name/Print	Julie K. Skoge	Registration Number	63,431

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.**

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 record s.

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.

Electronic Patent Application Fee Transmittal

Application Number:	15875564
Filing Date:	19-Jan-2018
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Filer:	Julie Katherine Skoge/Rebecca Krueger
Attorney Docket Number:	02316.2584US22/ADC003176

Filed as Large 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	1202	13	100	1300
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 1 month with $0 paid	1251	1	200	200
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	240	240
		Total in USD ($)		**1740**

Electronic Acknowledgement Receipt

EFS ID:	38973562
Application Number:	15875564
International Application Number:	
Confirmation Number:	6390
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Customer Number:	142510
Filer:	Julie Katherine Skoge/Rebecca Krueger
Filer Authorized By:	Julie Katherine Skoge
Attorney Docket Number:	02316.2584US22/ADC003176
Receipt Date:	26-MAR-2020
Filing Date:	19-JAN-2018
Time Stamp:	10:48:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1740
RAM confirmation Number	E20203PA49025444
Deposit Account	132725
Authorized User	Rebecca Krueger

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

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Extension of Time	2020-03-26-Ext-Time.PDF	153423 5d30efbafcc02335bb7d4cbee8e65dae76924bb3	no	2
Warnings:					
Information:					
2		2020-03-26-Amendment.PDF	196187 34987f21581c2b583c792b7f191cb6a656bde3cf	yes	14

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Specification	2	2
	Claims	3	9
	Applicant Arguments/Remarks Made in an Amendment	10	14

Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	2020-03-26-IDS-4-02316-2584US22.PDF	1034478 3075bd81d3ca4e7ddba572ac7e18e228503c4db3	no	4
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	34439 b3bb2f5484a2c6e66e247a8c5960572c35c9c79f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1418527		

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.

New Applications Under 35 U.S.C. 111

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.

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

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.

PTO/AIA/22 (03-13)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): 02316.2584US22/ADC003176

Application Number: 15/875,564

Filed: January 19, 2018

For: Fiber Optic Enclosure with Internal Cable Spool and Movable Cover (as amended)

Art Unit: 2874

Examiner: Ullah, Akm E.

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	Micro Entity Fee	
☑ One month (37 CFR 1.17(a)(1))	$200	$100	$50	$ 200
☐ Two months (37 CFR 1.17(a)(2))	$600	$300	$150	$
☐ Three months (37 CFR 1.17(a)(3))	$1,400	$700	$350	$
☐ Four months (37 CFR 1.17(a)(4))	$2,200	$1,100	$550	$
☐ Five months (37 CFR 1.17(a)(5))	$3,000	$1,500	$750	$

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 132725.

☑ Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 63,431.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Julie K. Skoge/ — Signature

March 26, 2020 — Date

Julie K. Skoge — Typed or printed name

612.332.5300 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.136(a). 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 6 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, 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 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.

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

142510 7590 11/26/2019

M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

EXAMINER	
ULLAH, AKM E	

ART UNIT	PAPER NUMBER
2874	

NOTIFICATION DATE	DELIVERY MODE
11/26/2019	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):

uspto142510@merchantgould.com

Office Action Summary	Application No. 15/875,564	Applicant(s) Kowalczyk et al.	
	Examiner Akm E Ullah	Art Unit 2874	AIA (FITF) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ 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.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☑ Claim(s) 13-20 is/are allowed.

7) ☑ Claim(s) 1-12 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, 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.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ 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)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☑ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

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

Detailed Action

Applicant cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Status of the Application

Parent Data:

This instant US application serial number 15/875,564, filed 01/19/2018 and having 1 RCE-type filing, which is a continuation of 15470311, filed 03/27/2017 and having 1 RCE-type filing therein 15470311 which is a continuation of 14979870, filed 12/28/2015 ,now U.S. Patent #9606319 and having 1 RCE-type filing which is a continuation of 14539459, filed 11/12/2014 ,now U.S. Patent #9261666 which is a continuation of 14132691, filed 12/18/2013 ,now U.S. Patent #8891931, which is a continuation of 13924191, filed 06/21/2013 ,now U.S. Patent #8705929 which is a continuation of 13479015, filed 05/23/2012 ,now U.S. Patent #8494333 which is a continuation of 13032337, filed 02/22/2011 ,now U.S. Patent #8189984 and having 2 RCE-type fillings which is a continuation of 12793556, filed 06/03/2010 ,now U.S. Patent #7894701, which is a continuation of 12182705,filed 07/30/2008 ,now U.S. Patent #7756379 and having 1 RCE-type filing, which is Claims Priority from Provisional Application 61029248, filed 02/15/2008, which claims Priority from Provisional Application 60954214, filed 08/06/2007.

No Child Data

Claims 1- 20 are pending in this application.

Claims 1- 12 are rejected over the prior art.

Claims 13 - 20 are allowed over the prior art.

If applicant is aware of any prior art or any other co- pending application not already of record, he/she is reminded of his/her duty under 37 CFR 1.56 to disclose the same.

If applicant provides prior art, he/she is requested to cite it on form PTO- 1449 in accordance with the guideline set forth in MPEP 609.

The Title Of The Invention is Not Descriptive

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Notice re prior art available under both Pre-AIA and AIA

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious

before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

Claims 1- 12 are rejected under 35 U.S.C. 103 as being unpatentable over Kowalczyk et al. (USPNO. 7,715,679).

Regarding claim 1, Kowalczyk et al disclose a fiber optic telecommunications device includes an enclosure defining an interior. A first fiber optic adapter is provided at the enclosure. A spool is provided at an exterior of the enclosure. A fiber optic cable, which includes a first optical fiber, is wrapped around the spool. A first fiber optic connector is mounted at a first end of the first optical fiber. The first end of the first optical fiber is positioned within the interior of the enclosure. The first fiber optic connector is inserted within the first fiber optic adapter. The enclosure and the spool are configured to rotate in unison about a common axis when the fiber optic cable is unwound from the spool.

The fiber optic enclosure includes an enclosure, a cable spool assembly disposed on an exterior surface of the enclosure, and a mounting assembly. The mounting assembly is rotationally engaged with the cable spool assembly such that the cable spool assembly selectively rotates about an axis of the mounting assembly.

Another aspect of the present disclosure relates to a fiber optic telecommunications device having a first fiber optic adapter, a spool, and a fiber optic cable wrapped around the spool. The fiber optic cable includes a first optical fiber. A first fiber optic connector is mounted at a first end of the first optical fiber. The first end of the first fiber optic connector is inserted within the first fiber optic adapter. The first fiber optic adapter and the spool is configured to rotate in unison about a common axis when the fiber optic cable is unwound from the spool.

The telecommunications equipment further includes an optical cable wrapped around the spool. The optical cable includes a first optical fiber having a first end and a second end. The first end of the first optical fiber is connectorized. The method further includes rotating the fiber optic adapter and the spool in unison about a common axis to pay out the optical cable from the spool so that the second end of the first optical fiber can be positioned at a remote location that is remote from the fiber optic adapter and the spool.

Regarding claim 2, further comprising a hinge (figure 6, numeral 79 and figure 20 wherein first portion 655 and second portion 656 are engaged by a hinge) for allowing the cover (27/225/425) to pivot between the open and closed positions.

See figures 2, 2A, 10 and 15-19

Regarding claim 3, wherein the fiber optic connector is supported on the spool when the fiber optic cable is paid out from the spool. **See lines column 1, 55 - 66 of the reference.**

Regarding claim 4, wherein the fiber optic adapter is coupled to the fiber optic connector, and wherein the fiber optic adapter rotates in concert with the spool as the fiber optic cable is paid out from the spool.

See lines column 1, 55 - 66 of the reference.

5. The fiber optic enclosure of claim 1, wherein the fiber optic cable includes a plurality of optical fibers, wherein a plurality of fiber optic connectors terminate the plurality of optical fibers at the first end of the fiber optic cable, wherein the fiber optic connectors rotate in concert with the spool as the fiber optic cable is paid out from the spool, wherein the telecommunications enclosure further includes a plurality of fiber optic adapters, wherein the plurality of fiber optic connectors are secured within the plurality of fiber optic adapters when the fiber optic cable is paid out from the spool.

Regarding claim 6, wherein a cable seal is provided at the cable opening.

Official Notice is taken that utilizing a cable seal is provided at the cable opening arranged for the fiber optic enclosure is old and well known in the art. See In Re Malcolm 1942 C.D. 589:543 O.G. 440 MPEP 706.02 (a).

Therefore, it would haven obvious to one of ordinary skill in the art at the time of the invention was made to use the teachings of the Kowalczyk et al. for having a cable seal at the cable opening in the fiber optic enclosure.

Regarding claim 7, further comprising a cable manager for storing slack cable (249 and 657) in a loop within the housing at a location separate from the spooling portion of the spool.

Regarding claim 8, wherein the cable manager is positioned such that the loop is not co-axial with the axis of rotation of the spool.

Regarding claim 9, wherein the cable manager includes a curved guide surface.

Regarding claim 10, wherein the cable manager is configured for storing the slack cable in a coil. This is an inherent teachings of the Kowalczyk et al. reference.

Regarding claim 11, wherein the cable manager includes a slack storage spool which defines the curved guide surface.

In reference to claims 7 - 9 and 11, see figures 11 & 20 of Kowalczyk et al. reference.

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the claimed invention to modify the invention of Kowalczyk et al. wherein access for plugging a connectorized end of the subscriber cable into the housing when the cover is in the open position and (b) not available from the front of the housing when the cover is in the closed position since, a fiber optic enclosure assembly having a mounting plate, an enclosure and a cable spool exteriorly disposed on the enclosure, the enclosure and the cable spool being rotatably engaged to the mounting plate, the enclosure being adapted to optically connect incoming fibers of a first cable

and outgoing fibers of a second cable, wherein the first cable is disposed about the cable spool; mounting the mounting plate to a vertical structure; and rotating the enclosure and the cable spool about an axis of the mounting plate until a desired length of the first cable is paid out.

Claims 1- 12 are rejected under 35 U.S.C. 103 as being unpatentable over Walters (USPNO. 6,220,413) in view of Fuller et al. (6,933,441).

Walters discloses a fiber optic enclosure assembly for enclosing optical fiber connections (figures 5, column 1, and lines 23 - 31) comprising:

A housing/frame (27) having an interior region; a bearing mount (41) disposed in the interior region; housing (27) includes a base (29) and a cover (33) and sidewalls (31) with an access port (35) and/or passage of the fiber optic cable (23).

A bearing mount (41) disposed in the interior region of the housing;

A cable spool (11) engaged with the bearing mount such that the cable spool (11) selectively rotates within the housing (column 2, lines 41- 47); and

A termination module (47), disposed on the cable spool (11) so that the termination module rotates in unison with the cable spool (column 2, lines 53-54).

The rotation of reel (11) allows the first portion of the cable (23) to be paid out from the interior of the housing (27) through the access port (35). It also disclose that the reel (11) is for storing and extending the fiber optic cable (23) that can be wrapped around the reel. The storage area can be located adjacent access port (35) for storing a pulling eye of the cable (23). When the connector panel (53) is placed in the position as shown in figure 5 of Walters's reference, the reel (11) can be rotated to extend or retract cable (23).

Walters disclose the end of cable 23 with individual fibers 61 being secured to connector panel 53 (see figure 5). The second of the cable 23 extends from the spool (11) and can be stored in the storage area (36).

Walter disclose a fiber optic adapter (see paragraph 58 - 61) i.e., connector sleeve (55) positioned within the interior of the housing (27) and coupled to the spool/reel (11), the connector sleeve (55) being together in particular form in order to couple to the end of an optical fiber (61) of the fiber optic cable (23) to an end of an optical fiber of a subscriber cable (i.e., a male plug connector on the end of a fiber optic line (59) while the connector sleeve (55) is mounted in the spool/reel (11).

Each connector sleeve (55) is to receive a male plug connector of the optical fibers (61) at the first end of the fiber optic cable (23) and the male plug connector on the end of a fiber optic line (59) to optically couple the fibers. The inner side, each receptacle of the connector sleeves (55) is adapted to receive male plug connectors on the ends of fibers (61) from the fiber optic cable (23) that is wrapped around the reel (11).

Walter disclose the fiber optic cable (23) is wrapped around a perimeter wall (19) of the spool/reel (11). See column 2, lines 14 - 23.

Walter (figures 5 & 6) includes two docking station with a connector panel (53) can be alternatively engaged: a frame docking station (43) on one of the frame's sidewalls (31) such that the connector panel rotates (47) that can be mounted to the hub (13) such that connector panel rotates with the reel (11).

The connector panel (53) comprises a flat having a plurality of fiber optic connector sleeves (55) mounted to it and two quick release fasteners (57) that can releasably engage holes (45) in the frame docking station (43) in figure 5, holes (51) of the docking station (47) in figure 6.

Walter also disclose a fiber optic adapter (connector sleeve numeral 55) since it couples the fibers (59) and fiber (61).

Walters fails to explicitly disclose/mention the cover is movable in order to selectively cover and uncover the opening in the housing (27).

Fuller disclose a telecommunications and data transmission fiber optic cable storage enclosure for maximum internal volume therein for housing a cable storage reel in the enclosure (13) comprising a rectangular box enclosure and a cover which can slid back to expose the internal mechanism and can secured to the enclosure (13) in order to permit to open the interior of the enclosure (13).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the claimed invention to use the teachings of Fuller reference in Walters since, it is therefore an important object of the present invention **to provide** a new and improved telecommunication cable reel storage enclosure which meets the existing design criteria for a specific size and configuration of the enclosure for a predetermined length of cable for permanent installation, or emergency use, **to provide** a cable reel enclosure which fits in a standard bank/rack of pre-existing cable reel enclosures and dispense and retract fiber optic cable from and onto a reel with jam free operation during cable extraction and retraction, and **to provide** an enclosure for a cable reel which has a brake on the reel during cable extraction which prevents the

wound cable from loosening on the reel when extraction tension on the cable is released (s**ee under objects of the invention in Fuller reference**) .

EXAMINERS NOTE:

A reference to specific paragraphs, columns, pages, or figures in a cited prior art reference is not limited to preferred embodiments or any specific examples. It is well settled that a prior art reference, in its entirety, must be considered for all that it expressly teaches and fairly suggests to one having ordinary skill in the art. Stated differently, a prior art disclosure reading on a limitation of Applicant's claim cannot be ignored on the ground that other embodiments disclosed were instead cited. Therefore, the Examiner's citation to a specific portion of a single prior art reference is not intended to exclusively dictate, but rather, to demonstrate an exemplary disclosure commensurate with the specific limitations being addressed. In re Heck, 699 F.2d 1331, 1332-33,216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting In re Lemelson, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)). In re: Upsher-Smith Labs. v. Pamlab, LLC, 412 F.3d 1319, 1323, 75 USPQ2d 1213, 1215 (Fed. Cir. 2005); In re Fritch, 972 F.2d 1260, 1264, 23 USPQ2d 1780, 1782 (Fed. Cir. 1992); Merck & Co. v. Biocraft Labs., Inc., 874 F.2d 804,807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989); In re Fracalossi, 681 F.2d 792,794 n.1,215 USPQ 569, 570 n.1 (CCPA 1982); In re Lamberti, 545 F.2d 747, 750, 192 USPQ 278,280 (CCPA 1976); In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akm Enayet Ullah whose telephone number is 571-272-2361. The examiner can normally be reached on Monday through Thursday from 6:30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le, can be reached on 571-272-2397. 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 http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/AKM E ULLAH/
Primary Examiner, Art Unit 2874

Applicant-Initiated Interview Summary	**Application No.** 15/875,564	**Applicant(s)** Kowalczyk et al.	
	Examiner Akm E Ullah	**Art Unit** 2874	**AIA (FITF) Status** No

All participants (applicant, applicants representative, PTO personnel):

(1) Akm Enayet. Ullah. (3) _____.

(2) Julie Skoge (Reg.no. 63,431). (4) _____.

Date of Interview: 20 November 2019.

Type: ☑ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☑ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☑Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 1-20.

Identification of prior art discussed: USPNO.7,715,679.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Discussed the differences between the instant application claims 1- 20 and the U.S.P. NO. 7,715,679.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/AKM E ULLAH/ Primary Examiner, Art Unit 2874	

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiners responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicants correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,-
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicants record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiners version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, Interview Record OK on the paper recording the substance of the interview along with the date and the examiners initials.

Notice of References Cited	Application/Control No. 15/875,564	Applicant(s)/Patent Under Reexamination Kowalczyk et al.	
	Examiner Akm E Ullah	Art Unit 2874	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-7715679-B2	05-2010	Kowalczyk; Scott C.	G02B6/3897	385/135
*	B	US-6933441-B2	08-2005	Fuller; Denise E.	G02B6/4453	174/135
*	C	US-6220413-B1	04-2001	Walters; Mark D.	G02B6/4457	191/12.4
*	D	US-6933441-B2	08-2005	Fuller; Denise E.	G02B6/4453	174/135
	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.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	Akm E Ullah	2874

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

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

CLAIM		DATE								
Final	Original	05/02/2019	11/20/2019							
	1	=	✓							
	2	=	✓							
	3	=	✓							
	4	=	✓							
	5	=	✓							
	6	=	✓							
	7	=	✓							
	8	=	✓							
	9	=	✓							
	10	=	✓							
	11	=	✓							
	12	=	✓							
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	15	=	=							
	16	=	=							
	17	=	=							
	18	=	=							
	19	=	=							
	20	=	=							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	Akm E Ullah	2874

CPC - Searched*		
Symbol	Date	Examiner
G02B6/46, 445, 4457, 4441, 4446, 4471, 3897, 4452, 4453, 4454	05/02/2019	AU
Updated above	11/20/2019	AU

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
385	135	05/02/2019	AU

* 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
EAST, ASSIGNEE and INVENTOR	05/02/2019	AU
Updated above	11/20/2019	AU

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
G02B	6/$ and Text limited search	05/02/2019	AU

/AKM E ULLAH/ Primary Examiner, Art Unit 2874	

IPR2025-01119
Belden EX1005

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"15875564"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/20 14:24
L2	77	("20030223724" | "20050002633" | "20050277829" | "20060153516" | "20170235079" | "4379615" | "5124606" | "6195494" | "6427045" | "6427781" | "6511009" | "6533205" | "7065282" | "7493003" | "8818157" | "9223103" | "9310578" | "9429728" | "9453971" | "9664871" | "9684142" | "9703063" | "9766414" | "9885846" | "RE47307" | "2282156" | "2767426" | "3346705" | "3433579" | "3612424" | "3837448" | "3983977" | "4143746" | "4470558" | "4520239" | "4953810" | "5172841" | "5246377" | "5310356" | "5528453" | "5773757" | "5957401" | "6035032" | "6135254" | "6176559" | "6220762" | "6223675" | "6286777" | "6349893" | "6361360" | "6419175" | "1276825" | "1442999" | "1446410" | "1474580" | "2502496" | "2521226" | "2727703" | "3131729" | "3657491" | "3667417" | "3920308" | "3940086" | "4053118" | "4081258" | "4201278" | "4384688" | "4587801" | "4635875" | "4657140" | "4666237" | "4767073" | "4869437" | "4883337" | "4913369" | "4939798" | "RE20995").PN.	US-PGPUB; USPAT	OR	OFF	2019/11/20 14:26
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L4	25	("20030223724" | "20050002633" | "20050277829" | "20060153516" | "20170235079" | "4379615" | "5124606" | "6195494" | "6427045" | "6427781" | "6511009" | "6533205" | "7065282" | "7493003" | "8818157" | "9223103" | "9310578" | "9429728" | "9453971" | "9664871" | "9684142" | "9703063" | "9766414" | "9885846" | "RE47307").PN.	US-PGPUB; USPAT	OR	OFF	2019/11/20 15:28

11/ 20/ 2019 3:44:14 PM

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1004	((("COMMSCOPE") near3 ("TECHNOLOGIES") near3 ("LLC"))).AS.AANM.	USPAT	OR	OFF	2019/11/20 12:12
L2	228	((("KOWALCZYK") near3 ("Scott")) OR (("COAN") near3 ("Jonathan")) OR (("KAML") near3 ("Jonathan"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/20 12:13
L3	71	(fiber adj2 optic adj10 enclosure)and(housing near10 cable near10 rout$4)and(spool$4 near5 cable near5 fiber)and (fiber near5 adapter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/20 12:16
L4	16	(fiber adj5 optic adj5 cable)same(spool adj5 mount$4)same (fiber adj4 optic adj5 connector with rotat$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/20 12:18
L5	509	(spool near5 fiber adj3 optic adj3 cable)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/20 12:19
L6	4	2 and 3 and 4 and 5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/20 12:19
L7	27	2 and 3 and 5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/20 12:21

11/ 20/ 2019 12:26:18 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	15875564
Filing Date	2018-01-19
First Named Inventor	Scott C. Kowalczyk
Art Unit	2874
Examiner Name	Ullah, Akm E.
Attorney Docket Number	02316.2584US22/ADC003176

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4379615		1983-04-12	Toda et al.	
	2	5124606		1992-06-23	Eisenbeis	
	3	6195494	B1	2001-02-27	Abbott et al.	
	4	6427045	B1	2002-07-30	Matthes et al.	
	5	6427781	B1	2002-08-06	Buhler et al.	
	6	6511009	B1	2003-01-28	Harrison et al.	
	7	6533205	B1	2003-03-18	Kles	
	8	7065282	B2	2006-06-20	Sasaki et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.E.U./

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	9	7493003	B2	2009-02-17	Kowalczyk et al.	
	10	8818157	B2	2014-08-26	Burek et al.	
	11	9223103	B2	2015-12-29	Kachmar	
	12	9310578	B2	2016-04-12	Vastmans et al.	
	13	9429728	B2	2016-08-30	Puetz et al.	
	14	9453971	B2	2016-09-27	Anderson et al.	
	15	9664871	B1	2017-05-30	Galvan Mijangos et al.	
	16	9684142	B2	2017-06-20	Collart et al.	
	17	9703063	B2	2017-07-11	Van Baelen et al.	
	18	9766414	B2	2017-09-19	Marcouiller et al.	
	19	9885846	B2	2018-02-06	Kowalczyk et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.E.U./

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Attorney Docket Number	02316.2584US22/ADC003176

	20	RE47307		2019-03-19	Allen	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030223724	A1	2003-12-04	Puetz et al.	
	2	20050002633	A1	2005-01-06	Solheid et al.	
	3	20050277829	A1	2005-12-15	Tsonton et al.	
	4	20060153516	A1	2006-07-13	Napiorkowski et al.	
	5	20170235079	A1	2017-08-17	Kowalczyk et al.	

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	1	2007-121598	JP		2007-05-17	Japan Recom Ltd. et al.		X

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Examiner Name	Ullah, Akm E.
Attorney Docket Number	02316.2584US22/ADC003176

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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Examiner Signature	/AKM E ULLAH/	Date Considered	11/18/2019

*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.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15875564
Filing Date	2018-01-19
First Named Inventor	Scott C. Kowalczyk
Art Unit	2874
Examiner Name	Ullah, Akm E.
Attorney Docket Number	02316.2584US22/ADC003176

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	/Julie K. Skoge/	Date (YYYY-MM-DD)	2019-08-05
Name/Print	Julie K. Skoge	Registration Number	63,431

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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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.E.P./

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15875564	Filing Date	2018-01-19	Docket Number (if applicable)	02316.2584US22/ADC00317	Art Unit	2874
First Named Inventor	Scott C. Kowalczyk			Examiner Name	Ullah, Akm E.		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☐ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 132725

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

IPR2025-01119
Belden EX1005

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Signature of Registered U.S. Patent Practitioner			
Signature	/Julie K. Skoge/	Date (YYYY-MM-DD)	2019-08-05
Name	Julie K. Skoge	Registration Number	63431

This collection of information is required by 37 CFR 1.114. 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 12 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, VA 22313-1450.

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IPR2025-01119
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PTO/SB/08a (02-18)
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(Not for submission under 37 CFR 1.99)

Application Number	15875564
Filing Date	2018-01-19
First Named Inventor	Scott C. Kowalczyk
Art Unit	2874
Examiner Name	Ullah, Akm E.
Attorney Docket Number	02316.2584US22/ADC003176

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4379615		1983-04-12	Toda et al.	
	2	5124606		1992-06-23	Eisenbeis	
	3	6195494	B1	2001-02-27	Abbott et al.	
	4	6427045	B1	2002-07-30	Matthes et al.	
	5	6427781	B1	2002-08-06	Buhler et al.	
	6	6511009	B1	2003-01-28	Harrison et al.	
	7	6533205	B1	2003-03-18	Kles	
	8	7065282	B2	2006-06-20	Sasaki et al.	

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	9	7493003	B2	2009-02-17	Kowalczyk et al.	
	10	8818157	B2	2014-08-26	Burek et al.	
	11	9223103	B2	2015-12-29	Kachmar	
	12	9310578	B2	2016-04-12	Vastmans et al.	
	13	9429728	B2	2016-08-30	Puetz et al.	
	14	9453971	B2	2016-09-27	Anderson et al.	
	15	9664871	B1	2017-05-30	Galvan Mijangos et al.	
	16	9684142	B2	2017-06-20	Collart et al.	
	17	9703063	B2	2017-07-11	Van Baelen et al.	
	18	9766414	B2	2017-09-19	Marcouiller et al.	
	19	9885846	B2	2018-02-06	Kowalczyk et al.	

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	Examiner Name	Ullah, Akm E.
	Attorney Docket Number	02316.2584US22/ADC003176

	20	RE47307		2019-03-19	Allen	

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	1	20030223724	A1	2003-12-04	Puetz et al.	
	2	20050002633	A1	2005-01-06	Solheid et al.	
	3	20050277829	A1	2005-12-15	Tsonton et al.	
	4	20060153516	A1	2006-07-13	Napiorkowski et al.	
	5	20170235079	A1	2017-08-17	Kowalczyk et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2007-121598	JP		2007-05-17	Japan Recom Ltd. et al.		X

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	Application Number	15875564
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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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Name/Print	Julie K. Skoge	Registration Number	63,431

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PAT-NO: JP02007121598A
DOCUMENT-IDENTIFIER: JP 2007121598 A
TITLE: TERMINATION BOARD IN CLOSURE FOR CONNECTING OPTICAL CABLE
PUBN-DATE: May 17, 2007

INVENTOR-INFORMATION:

NAME	COUNTRY
KOSHIYAMA, MITSUHARU	N/A
TSURUTA, IKUYA	N/A
OSHIMA, YOSHIHISA	N/A
NISHIMURA, AKIHITO	N/A
IWAMOTO, HISAYA	N/A
AONO, TETSUAKI	N/A
ISHIHARA, TATSUYA	N/A
MACHINO, KOJI	N/A
HASHIGUCHI, MASAHIRO	N/A
AWAMORI, MASAFUMI	N/A

ASSIGNEE-INFORMATION:

NAME	COUNTRY
JAPAN RECOM LTD	N/A
NIPPON TSUSHIN DENZAI KK	N/A
NIPPON TELEGR & TELEPH CORP	N/A

APPL-NO: JP2005312329
APPL-DATE: October 27, 2005

INT-CL-ISSUED:

TYPE	IPC DATE	IPC-OLD
IPCP	G02B6/00 20060101	G02B006/00

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a termination board in a closure for connecting an optical cable permitting a single core application without affecting other coated optical fibers in the cases of pull-down wiring and branch connection wiring from an optical cable; allowing vacant coated optical fibers to be used as single coated optical fibers for subsequent subscribers to raise a use efficiency of the coated optical fibers; substantially improving workability such as coated optical fiber storing work, check and repair by making the

connections and storing of the coated optical fibers into a connector-connectable configuration; and also maintaining a favorable transmission characteristic.

SOLUTION: The termination board 11 is arranged to be able to mount two or more connectors C as connection parts of main coated optical fibers a of an optical cable A in a connector mounting part, and in order to connect the coated optical fibers to each of the terminating tray and/or splitter tray configured to be connector-connectable via the termination board 11, a wiring hold part 111 which makes a single coated optical fiber led into the termination board 11 curve and run along the outside surface is formed, and a round shaped guide 15 which holds down the coated optical fiber to be freely attachable/detachable to/from the wiring hold part 111 and guides and holds it to a connector mounting part 14 is pivotally supported so as to be freely turnable, and also the connectors connected to the single coated optical fibers are arranged in the connector mounting part 14.

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(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2007-121598
(P2007-121598A)
(43)公開日　平成19年5月17日(2007.5.17)

(51)Int.Cl.		F I			テーマコード（参考）
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審査請求 未請求　請求項の数 9　ＯＬ　（全 24 頁）

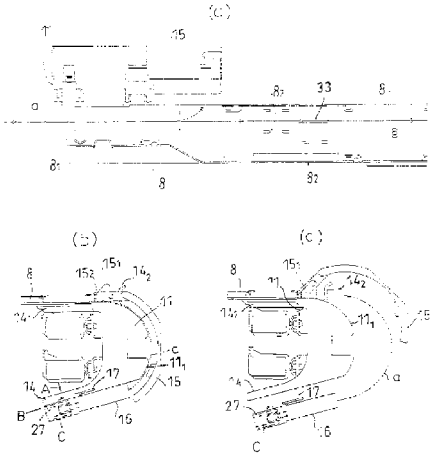
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(54)【発明の名称】光ケーブル接続用クロージャにおける成端盤

(57)【要約】
【課題】光ケーブルからの引き落とし配線及び分岐接続配線の際に、他の心線に影響を与えないで単心運用でき、空いている心線は、その後のユーザの加入などの単心線として用いて心線使用効率を高め、心線接続・収納をコネクタ接続可能の構成として心線収納作業、点検補修等の施工性を大幅に向上させ、伝送特性も良好に維持する。
【解決手段】光ケーブルＡの主心線ａの接続部となるコネクタＣを複数コネクタ取付部に配備できる成端盤１１とし、該成端盤１１を経由して、コネクタ接続可能の構成とした成端トレイおよび／またはスプリッタトレイの各トレイに接続するのに、前記成端盤１１に導入される単心線を外側面に湾曲して沿わせる配線保持部11_1を形成し、該配線保持部11_1上の心線を接離自在に押さえ込みコネクタ取付部１４に案内保持するアール状ガイド１５を回動自在に枢支し、かつ単心線に接続したコネクタをコネクタ取付部１４に配備した。
【選択図】図３



【特許請求の範囲】
【請求項１】
光ケーブル心線の接続部となるコネクタを収納するコネクタ収納部と、心線余長を収納する心線余長収納部とを備えてコネクタ接続を可能にした構成の成端トレイおよび／またはスプリッタトレイをクロージャ本体内に内装する光ケーブル接続用クロージャに用いられる成端盤が、前記成端トレイおよび／またはスプリッタトレイの各トレイに接続される心線に設けたコネクタを複数着脱自在に取り付けられるコネクタ取付部のある成端盤とし、該成端盤に導入される単心線を外側面に湾曲して沿わせる配線保持部を形成し、該配線保持部上の単心線を接離自在に押さえ込みコネクタ取付部に案内保持するアール状ガイドを回動自在に枢支すると共に、コネクタを着脱自在に挿入するコネクタソケットを介してコネクタ取付部に配備することを特徴とする光ケーブル接続用クロージャにおける成端盤

【請求項２】
請求項１に記載の光ケーブル接続用クロージャにおける成端盤において、コネクタ取付部がコネクタを挿脱自在に内装できる筒状のコネクタソケットを介して取り付けられるものであって、コネクタソケットを嵌入しうる格子状のガイドリブと、把持溝となる該ガイドリブ間に形成された嵌合孔と係止孔に係止しうる係止片をコネクタソケットに対応して設けられていて、該コネクタソケットをコネクタ取付部に着脱自在に配備できる構成とした特徴とする光ケーブル接続用クロージャにおける成端盤。
【請求項３】
請求項１または請求項２に記載の光ケーブル接続用クロージャにける成端盤が、湾曲外側面の配線保持部を持った断面コ字状部材からなり、該湾曲外側面に沿うアール状ガイドを軸受部によって支軸に回動自在に枢支すると共に、上部にセントートレイ取付部と前記ガイドを閉止固定並びに開放受け止めのための係止ロック部とを設け、下部にコネクタ取付部を備え、前記センタートレイ取付部に固定されたセンタートレイ内に導入される心線から分離した単心線を前記アール状ガイドによって配線保持部を経て下方に沿わせ落とし込み保持し、単心線に接続されたコネクタをコネクタソケットを介して前記コネクタ取付部に着脱自在に備えたことを特徴とする光ケーブル接続用クロージャの成端盤。
【請求項４】
請求項２または請求項３に記載の光ケーブル接続用クロージャにける成端盤において、該成端盤のコネクタ取付部にコネクタソケットを介して取り付けたコネクタを保持するコネクタ固定部材をコネクタ固定ベースによって前記コネクタ取付部に対向配備したことを特徴とする光ケーブル接続用クロージャの成端盤。
【請求項５】
請求項２または請求項３に記載の光ケーブル接続用クロージャにおける成端盤において、前記コネクタ固定部材が、コネクタ挿入凹部と心線挿通溝とを備えた受け部にコネクタ固定ベースに係合する断面逆Ｔ字状の連結部と、ストッパ片とを一体に成形し、該連結部を前記コネクタ固定ベースの把持溝に着脱自在に嵌合したことを特徴とする光ケーブル接続用クロージャの成端盤。
【請求項６】
請求項４または請求項５に記載の光ケーブル接続用クロージャにおける成端盤において、前記コネクタ固定ベースが、一端に把持溝を櫛状に複数形成し、該把持溝にコネクタ固定部材を着脱自在に立設する植込部を備え、他端にトレイ固定ベースに連結する取付部を延設したことを特徴とする光ケーブル接続用クロージャの成端盤。
【請求項７】
請求項５または請求項６に記載の光ケーブル接続用クロージャにおいて、前記スプリッタトレイが、前記成端盤に接続する心線にプラグを設けられると共に、各成端トレイに接続される複数の心線にソケットを設けたスプリッタモジュールが配備されてコネクタ接続を可能にしたスプリッタトレイに構成したことを特徴とする光ケーブル接続用クロージャに用いられる成端盤。

【請求項８】
請求項５、請求項６または請求項７に記載の光ケーブル接続用クロージャにおいて、前記成端トレイが、コネクタ収納部を左右に分けて複数備え、前記スプリッタトレイよりの心線を導入部で固定するドロップ固定部材を必要に応じ設けて、下部伸ばし成端トレイと、ＤＳ／Ｒ・ＴＤ成端トレイと、ドロップ成端トレイとして、それぞれトレイ取付部を介してトレイ固定ベースに複数重ねた状態で、枢支部によって回動自在に枢着したことを特徴とする光ケーブル接続用クロージャに用いられる成端盤。
【請求項９】
請求項７、請求項８または請求項６に記載の光ケーブル接続用クロージャにおいて、前記光ケーブル心線の接続部を収納する接続部収納部と、心線余長を収納する心線余長収納部とを備えてコネクタ接続を可能にした構成の接続用トレイを設けると共に、前記成端トレイを水平状態に保留する櫛歯が多段にあるトレイ収納部にトレイ取付部を摺動自在に配備して成端トレイを前後にスライドできるようにしたことを特徴とする光ケーブル接続用クロージャに用いられる成端盤。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、通信ケーブル、特に光ファイバ心線を有する光ファイバケーブル（以下光ケーブル）の架空区間のアクセス区間において、固定配線区間の配線点やケーブル接続点における外被接続並びに架空光ケーブルと、ドロップ光ケーブルの接続のために用いられ、光ケーブルの接続部を保護して、心線余長を収納し、光ケーブルからの引き落し配線および分岐接続配線の際に、他の心線に影響を与えないで単心運用でき、空いている心線はその後のユーザーの加入など必要な単心線として使用して心線使用効率を高め、需要変動にも容易に対応でき、しかも接続配線作業時の取り扱いを容易とし、その作業性を大幅に向上できる光ケーブル接続用クロージャに用いられる成端盤に関するものである。
【背景技術】
【０００２】
従来から、光ケーブルの分岐、引込、接続などを行う場合、クロージャ内においてケーブル心線相互を接続すると共に、該接続部とケーブル心線の余長分とを収納するための心線接続余長収納トレイを備えたクロージャが知られている。
このクロージャは、心線幹線用光ケーブルの主ケーブルから引き出された光ケーブル心線同士或いは分岐用光ケーブルから引き出された心線とを接続する接続部が収納され、さらに接続された心線の余長部分を巻回して保護収納する心線余長収納部とを備えたものとして接続機能専用クロージャ或いはドロップ機能専用クロージャとして用いられている。（特開２００１－４２１５５号）
【０００３】
特許文献１の光ケーブル接続用クロージャは、心線用トレイがテープ心線から分岐した単心ごとに接続部と心線余長とを別個に一括収納できるドロップ用トレイに構成され、該ドロップ用トレイをクロージャ内に設けた取付部に備えたものが開示されている。
【特許文献１】特開２００１－４２１５５号公報
【発明の開示】
【発明が解決しようとする課題】
【０００４】
ところが、光ケーブルを用いた通信網では、光アクセス網の最適な配線形態とすることや、接続配線の作業性の良いこと、さらには光アクセスサービスを迅速かつ安価に提供することが要請されているのに、単心運用作業が難しく光アクセス系設備の効率的な使用や経済的な使用に十分満足するものがなく、特に、ケーブルの高密度、多心化或いは伝送高速度化が進むにつれて容量が不足なりがちで接続分岐に伴う作業や配線整理もやりにくいといった問題が生じている。
また光ケーブルの分岐作業においては、ドロップ光ケーブルを引き落とすためには、使

用不能の心線が生じて不経済となるし、心線を再度本線に戻すことも出来ないなど取り扱いも不便になり、アクセス系設備の効率的かつ経済的な使用ができないし、ドロップ光ケーブルや下部仲ばしテープ心線その他のケーブルへの接続作業時等の配線連絡に心線の引っ張りや屈曲の発生が生じて、接続不良や安全性に欠けさらには振動現象によって伝送特性にも信頼性がないなど問題があった。

【０００５】

本発明は、これら従来の事情に鑑みてなされたものであり、光ケーブル単心線を使用し、該光ケーブルからの引き落し配線および分岐接続配線の際に、他の心線に影響を与えないで単心運用でき、空いている心線は、その後のユーザーの加入などの必要な単心線として用いて心線使用効率を高め、心線接続・収納はモジュール化をはたしたコネクタ接続可能の構成として接続作業や心線収納作業、さらには接続状況の点検補修などの保守作業を含め施工性を大幅に向上させるほか、単心に分離した心線を容易に保護することができて、光ケーブルの有効利用が可能で、心線の下部延ばしや、架空ループ配線にも対応でき、しかも一旦分岐した心線を再度本線に戻すこともできるなど光アクセスサービスを迅速で安価に提供できるし、引き落とし配線および分岐接続配線とそのコネクタ接続部とを収納するための機能が異なるトレイを機能要求に対して必要となる各トレイを簡単に増設追加増設、撤去でき取扱い簡便な架空または地上載置用の光ケーブル接続用クロージャにおける成端盤とすることを目的とするものである。

【課題を解決するための手段】

【０００６】

上述の課題を解決するために、この発明は光ケーブル心線の接続部となるコネクタを収納するコネクタ収納部と、心線余長を収納する心線余長収納部とを備えてコネクタ接続を可能にした構成の成端トレイおよび／またはスプリッタトレイをクロージャ本体内に内装する光ケーブル接続用クロージャに用いられる成端盤は、成端トレイおよび／またはスプリッタトレイの各トレイに接続される心線に設けたコネクタを複数着脱自在に取り付けられるコネクタ取付部のある成端盤とし、該成端盤に導入される単心線即ち、主ケーブルから引き落とされる単心線またはテープ心線を外側面に湾曲して沿わせる配線保持部を形成し、該配線保持部上の単心線を接離自在に押さえ込みコネクタ取付部に案内保持するアール状ガイドを回動自在に枢支すると共に、コネクタを着脱自在に挿入するコネクタソケットを介してコネクタ取付部に配備したものである。

【０００７】

この発明は、成端盤のコネクタ取付部がコネクタを挿脱自在に内装できる筒状のコネクタソケットを介して取り付けられるものであって、コネクタソケットを嵌入しうる格子状のガイドリブと、把持溝となる該ガイドリブ間に形成された嵌合孔と係止孔に係止しうる係止片をコネクタソケットに対応して設けられていて、該コネクタソケットをコネクタ取付部に着脱自在に安全に配備できる構成としたことで、光ケーブルの単心線を使用して光ケーブルの心線接続、収納の作業さらには、接続状況の点検補修などの保守作業を含め施工性を著しく簡便化でき、引き落し配線および分岐接続配線の保護と信頼性を大幅に向上する。

【０００８】

また、この光ケーブル接続用クロージャの成端盤においては、心線から分離した単心線を前記アール状ガイドによって配線保持部を経て下方に沿わせ落とし込み保持し、単心線にキャリアチェンジなどにより他機能のトレイに切替え必要とした場合、コネクタ接続を用いることにより、従来の融着接続およびメカニカルスプライス接続時に生じた心線切り縮み心線余長処理作業をなくして、より安全で確実な接続施工が行え、作業の簡便化と信頼性の向上を図れる。

【０００９】

さらに、本発明の光ケーブル接続用クロージャの成端盤の特徴は、成端盤のコネクタ取付部にコネクタソケットを介して取り付けたコネクタを保持するコネクタ固定部材をコネクタ固定ベースによって前記コネクタ取付部に対向配備しているものであって、ドロップ

ケーブルの固定化が確実にでき、成端トレイ内での作業をも簡便に行なうことができて作業性を大幅に向上する。

【００１０】

さらに、本発明では成端盤が、湾曲外側面の配線保持部を持った断面コ字状部材からなり、該湾曲外側面に沿うアール状ガイドを軸受部によって支軸に回動自在に枢支すると共に、上部にセンタートレイ取付部と前記ガイドの閉止固定並びに開放受け止めとして用いられる係止ロック部とを設け、下部にコネクタ取付部とを備え、該センタートレイ取付部に固定されたセンタートレイ内に導入される心線から分離した単心線を前記アール状ガイドによって配線保持部を経て下方に沿わせ落とし込み保持し、単心線に接続されたコネクタをコネクタソケットを介して前記コネクタ取付部に着脱自在に備えたことにより、心線の長手方向に複数カ所のコネクタ取付部材を備えることとなって接続失敗を考慮してコネクタ接続部を任意の位置に固定することも容易に可能で、さらにコネクタ脱着時に心線の引っ張りや屈曲の発生を抑制して、ＳＳサービス（専用線／Ｂフレッツ　ベーシック）を要望する加入者へ引き落しするため光ケーブルとドロップケーブルまたは発信ケーブルのＤＳケーブルとのコネクタ接続部および心線余長を収納保護する。

【００１１】

また本発明の成端盤は、コネクタ固定部材が、コネクタ挿入凹部と心線挿通溝とを備えた受け部にコネクタ固定ベースに係合する断面逆Ｔ字状の連結部と、ストッパ片とを一体に成形し、該連結部を前記コネクタ固定ベースの把持溝に着脱自在に嵌合すると共に、、前記コネクタ固定ベースが、一端に把持溝を櫛状に複数形成し、該把持溝にコネクタ固定部材を着脱自在に立設する植込部を備え、他端にトレイ固定ベースに連結する取付部を延設したことで、心線着脱時に他心線への影響をなくすことができ、心線の引っ張りや屈曲の発生を抑制する安全な構成としてある。

【００１２】

また本発明では、コネクタを複数着脱自在に取り付けられるコネクタ取付部のある成端盤を備え、該コネクタに接続され、光ケーブル接続用クロージャ本体に備えられる前記スプリッタトレイ（ＳＰトレイ）が、ＰＯＮサービスを要望する加入者へ引き落すために単心ケーブルとＳＰ入力線およびＳＰ出力線とドロップケーブルまたはＤＳケーブルとのコネクタおよび心線余長ならびにスプリッタモジュール（ＳＰモジュール）を収納保護するものであって、複数のコネクタを備えたＳＰモジュールをトレイ内に取付部によって着脱自在に設けてあり、またコネクタ固定部材を両端部に設けて、左右いずれの側からでもドロップケーブルを引き出せるようにし、しかもＳＰ入力線のコネクタ接続部が左右に振り分けて固定できる構成とすると共に、心線着脱時に他心線への影響をなくす構成となっている。

【００１３】

本発明の成端盤が用いられる光ケーブル接続用クロージャでは、前記スプリッタトレイが、前記成端盤に接続する心線にプラグを設けられると共に、各成端トレイに接続される複数の心線にソケットを設けたスプリッタモジュールが配備されてコネクタ接続を可能にしたスプリッタトレイに構成したことで、前記ドロップ成端トレイ（ＤＳ用トレイ）が、配備される接続トレイ（ＳＳトレイ）或いはスプリッタトレイ（ＳＰトレイ）からの出側心線である単心線とＤＳケーブルとのコネクタ接続部および心線余長を収納保護するものであって、加入者対応によりその都度、増設可能とするコネクタ固定構造でＤＳケーブル側の接続失敗余長吸収構造で、左右コネクタ方向への心線振り分けできるようにし、ＤＳ心線側のコネクタを引き抜く際にも心線余長に影響を与えない安全な構成としてある。

そして該ドロップ成端トレイが、枢支部のヒンジ部によって回動自在で、着脱自在にトレイ固定ベースに設けて、各心線の接続回数により生ずる心線余長差を吸収する心線余長収納部を形成し、さらにコネクタ脱着時に心線の引っ張りや屈曲の発生を抑制するようになっている。

【００１４】

前記成端トレイとしては、コネクタ収納部を左右に分けて複数備え、前記スプリッタト

レイよりの心線を導入部で固定するドロップ固定部材を必要に応じ設けて、下部伸ばし成端トレイと、ＤＳ／Ｒ・ＴＤ成端トレイと、ドロップ成端トレイとして、それぞれトレイ取付部を介してトレイ固定ベースに複数重ねた状態で枢支部によって回動自在に枢着したことにより、これら成端トレイで、テープ心線ケーブルルートにクロージャを設置して単心運用するためにクロージャ中心点で切断したテープ心線と割れ入れ心線との接続部と心線余長との収納部を形成したトレイ、例えば片側最大８接続分の固定が可能で、主ケーブル側テープ心線余長をトレイ内に収納でき、上部側或いは、下部側に配備して使用するため左右対称形状の構造で、さらに４心テープ分の出口を個別ルートに分割することで識別容易なトレイとすることもできる。

さらに、前記成端トレイを水平状態に保留する櫛歯が多段にあるトレイ収納部にトレイ取付部を摺動自在に配備してスプリッタトレイおよび成端トレイを前後にスライドできるようにしたことで、各トレイ内での接続作業がし易い位置に変移させて行うことができ、且つ回動自在のトレイであるため重ねられた各トレイの重合面の開放も容易で、点検、補修作業の簡便化が図れる。

【００１５】

なお、光ケーブル接続用クロージャでは、光ケーブル心線の接続部並びに接続余長部分を保護収納する機能の異なる成端トレイをトレイ固定ベースに配備されているものであって、各トレイを係止片と係止受部とからなる係止部によって固定維持できる構成とし、またヒンジ部によって回動自在で、かつ着脱自在にトレイ取付部に複数設けると共に、クロージャー本体内に設けたフレームに固定して、且つ前記スプリッタトレイ及び前記ドロップ成端トレイを複数重ねた状態で摺動可能に配備したものを用い、各トレイを位置変換して配線処理でき、しかも光需要に際して任意のクロージャにて本線から必要な単心線のみを引き落としたり、本線に戻したりすることが容易にできるようにするのがよい。

すなわち、多心光ファイバテープ心線から光ファイバ単心線に分離して１心線のみ又はそれ以上を選んで引き落しケーブルに接続して、他は引き通し光ファイバ単心線として下部に送り込めるように保有しておくことが可能となる。また接続作業に必要な余長心線は、任意のドロップ用トレイを開いて、或いは取り出したりして接続部と共に収納しておくことができる。

そして、空いている心線はその後のユーザーの加入など必要な単心線として使用することができ、そのほか他の心線の接続作業や接続状況の点検、補修、確認、調整など作業をも統合してきわめて容易に行うことができる。

【００１６】

また、前記ドロップ成端トレイおよびスプリッタトレイは、多段で変位可能に配備していて、所定位置で回動自在に変換でき、接続単位で複層化したもので、心線接続部は固定しないし、心線余長も曲率半径を確保した上で取り回し収納できるので、心線余長の吸収に自由度を持たせて納められ、伝送特性に悪影響を及ぼすことがない形態で用いられる。

【発明の効果】

【００１７】

本発明は、コネクタ接続を可能にした構成の成端トレイおよび／またはスプリッタトレイをクロージャ本体内に内装する光ケーブル接続用クロージャに用いられ成端盤が、前記成端トレイおよび／またはスプリッタトレイの各トレイに接続される心線に設けたコネクタを複数着脱自在に取り付けられるコネクタ取付部のある成端盤とし、該成端盤に導入される単心線を外側面に湾曲して沿わせる配線保持部を形成し、該配線保持部上の心線を接離自在に押さえ込みコネクタ取付部に案内保持するアール状ガイドを回動自在に枢支すると共に、コネクタを着脱自在に挿入するコネクタソケットを介してコネクタ取付部に配備した構成としたことにより、光ケーブルからの引き落し配線および分岐接続配線の際に、他の心線に影響を与えないで単心運用でき、空いている心線はその後のユーザーの加入になどの必要な単心線として用いて心線使用効率を高め、心線接続・収納はモジュール化し、コネクタ接続可能の構成として接続作業や心線収納作業、さらには接続状況の点検補修などの保守作業を含め施工性を大幅に向上させるほか、単心に分離した心線を保護するこ

とができて、光ケーブルの有効利用が可能で、心線の下部延ばしや、架空ループ配線にも対応でき、しかも一旦分岐した心線を再度本線に戻すこともできるなど光アクセスサービスを迅速で安価に提供できるし、引き落し配線および分岐接続配線とそのコネクタ接続部とを収納するための機能が異なるトレイをも設けることも可能で、機能要求に対して必要となる各トレイを簡単に増設追加増設、撤去でき心線接続作業が著しく簡易、良好でケーブルの切り替え配線処理も楽にできるので、取扱いの簡便化が図れる。

【００１８】

本発明で用いられる成端盤では、各トレイを切り替え接続する心線のコネクタ取付部が、コネクタソケットを嵌入しうる格子状のガイドリブと、把持溝となる該ガイドリブ間に形成された嵌合孔と係止孔に係止しうる係止片をコネクタソケットに対応して設けられていて、該コネクタソケットをコネクタ取付部に着脱自在に安全に配備できる構成としたことで、光ケーブルの単心線を使用でき、光ケーブルからの引き落し配線および分岐接続配線の際に、他の心線に影響を与えないで単心運用でき、空いている心線は、その後のユーザーの加入になどの必要な単心線として用いて心線使用効率を高め、心線接続・収納はモジュール化を含めコネクタ接続可能の構成として接続作業や心線収納作業、さらには接続状況の点検補修などの保守作業を含め施工性を大幅に向上させることができる。

【００１９】

さらに、光ケーブル接続用クロージャに用いられる本発明の成端盤は、湾曲外側面の配線保持部を持った断面コ字状部材からなり、該湾曲外側面に沿うアール状ガイドを軸受部によって支軸に回動自在に枢支すると共に、上部にセンタートレイ取付部と、前記ガイドを閉止固定並びに開放受け止めするため係止ロック部とを設け、下部にコネクタ取付部を備え、前記センタートレイ取付部に固定されたセンタートレイ内に導入される心線から分離した単心線を前記アール状ガイドによって配線保持部を経て下方に沿わせ落とし込み保持し、単心線に接続されたコネクタをコネクタソケットを介して前記コネクタ取付部に着脱自在に備えたことにより、コネクタ脱着時に心線の引っ張りや屈曲の発生を抑制でき単心分離作業時での心線も見やすく配線作業を容易で、迅速に行なうことができ、また単心線を安全に保護することができるし、心線の接続失敗時に短くなった心線も容易に取り付けられ、心線の引き落しや切替えができるので、心線接続作業、心線収納作業の簡素化に役立ち、優れた単心運用ができる。

【００２０】

この光ケーブル接続用クロージャの成端盤は、そのコネクタ取付部が、コネクタを挿脱自在に内装できるコネクタソケットを嵌入しうる格子状のガイドリブと、該ガイドリブ間に形成された嵌合孔と係止孔に係止しうる係止片をコネクタソケットに対応して設けられている構成からなることで、コネクタソケットを着脱自在に配備でき、該コネクタソケット内にコネクタを挿脱自在に内装してコネクタ脱着作業が簡便にできるほか、コネクタの取り付けセット後の安全性が容易に確保でき各トレイへの接続ケーブル或いはＳＳ接続の場合のドロップケーブルの脱落防止にも役立ち心線の引っ張りや屈曲の発生を抑制できて配線保護にも寄与できる。

【００２１】

さらに、コネクタ接続を可能にした構成のスプリッタトレイが、複数のコネクタを備えたスプリッタモジュールをトレイ内に取付部によって着脱自在に設け、さらにコネクタ脱着時に心線の引っ張りや屈曲の発生を抑制するガイドを形成したことにより、スプリッタモジュールが取り外し、取付けでトレイと別個に開放取り扱うことができ接続作業や各トレイの更新並びに増設作業も容易にできる形態で用いられる。

【００２２】

また、本発明によれば、コネクタ接続を可能にした構成の成端トレイが、成端盤を介して接続作業できるので、心線の長手方向に複数カ所のコネクタ収納部に選定して心線を接続するコネクタを備えられて、コネクタ脱着時に心線の引っ張りや屈曲の発生を抑制でき単心分離作業時での心線も見やすく配線作業を容易で、迅速に行なうことができ、また単心線を安全に保護することができるし、心線の接続失敗時に短くなった心線も容易に取り

付けられ、心線の引き落しや切替えができるので、心線接続作業、心線収納作業の簡素化に役立ち、単心運用のための処理、収納作業に優れた機能を発揮できる。

【００２３】

この光ケーブル接続用クロージャの前記成端盤は、そのコネクタ取付部がガイドリブからなる把持溝と、嵌合孔に嵌合凸部との係止構成をコネクタソケットとの接合面に対応して設けられていることで、コネクタ脱着作業が簡便にできるほかコネクタの取り付けセット後の安全性が容易に確保でき各トレイへの接続ケーブル或いはＳＳ接続の場合のドロップケーブルの脱落防止にも役立ち心線の引っ張りや屈曲の発生を抑制できて配線保護にも寄与できる。

【００２４】

この場合、光ケーブル接続用クロージャで用いられる前記スプリッタトレイが、複数のコネクタを備えたスプリッタモジュールをトレイ内の左右両側に選択して着脱自在に設けられるトレイと、さらに心線余長を収納する収納部を有し心線導出部を左右に振り分けて形成したトレイとの上下二層のトレイとをヒンジ部によつて開閉自在に連結した構成とすれば、各トレイにスプリッタモジュールと心線余長とを分離収納できて成端盤からのスプリッタ入力心線をスプリッタモジュールに接続し成端トレイに接続する配線系としての成端盤から経由して各成端トレイへの配線をし易くして整理の簡便化を図ることができ作業性の向上に寄与できる。

【００２５】

なお、前記スプリッタトレイが、前記成端盤に接続する心線にプラグを設けられると共に、各成端トレイに接続される複数の心線にソケットを設けたスプリッタモジュールが配備されてコネクタ接続を可能にしたスプリッタトレイに構成すると、成端盤からのスプリッタ入力心線をスプリッタモジュールに接続し成端トレイに接続する配線系として簡素化され取扱も容易で作業員の接続誤処理をなくし、作業の均一性を図って品質維持をはかれる。

【００２６】

また、本発明の実施例の光ケーブル接続用クロージャで用いられる前記成端トレイは、コネクタ収納部を左右に分けて複数備え、前記スプリッタトレイよりの心線を導入部で固定するドロップ固定部材を必要に応じ設けて、下部伸ばし成端トレイと、ＤＳ／Ｒ・ＴＤ成端トレイと、ドロップ成端トレイとして、それぞれトレイ取付部を介してトレイ固定ベースに複数重ねた状態で、枢支部によって回動自在に枢着すると、トレイ内において心線の接続回数により心線余長差が発生しても、その余長差を吸収する余長収納部があるため取り回し収納できるので、伝送特性に悪影響を及ぼすこともなく、心線余長収納での高信頼性が得られるし、複数に積層されたトレイの切り替えも可能でクロージャとして安全性並びに作業性を大幅に向上することができる。

【００２７】

さらに、用いられる光ケーブル接続用クロージャでは、前記光ケーブル心線の接続部を収納する接続部収納部と、心線余長を収納する心線余長収納部とを備えてコネクタ接続を可能にした構成のスプレッタトレイおよび成端トレイを水平状態に保留する櫛歯が多段にあるトレイ収納部にトレイ取付部を摺動自在に配備して成端トレイを前後にスライドできるようすると、配線接続その他点検、補修処理作業の際に、各トレイ内での接続作業がし易い位置に変移させて行うことができ、且つ回動自在のトレイであるため重ねられたトレイの重合面の開放も容易で、点検、補修作業の簡便化が図れる。

【発明を実施するための最良の形態】

【００２８】

本発明の実施例を図面を用いて説明すると、図１及び図２に示すクロージャ本体１は、ヒンジ部1_1で一体に連接され、開閉自在に構成されたスリーブからなり、光ケーブルＡをシール部材を介して挿入する端面板２が両端に着脱自在に備えてある。そして光ケーブルＡは、前記端面板２を経てクロージャ本体１内に導入、導出され、ケーブルＴＭ把持具３（ケーブルテンションメンバ把持具）によって把持されていて、光ケーブルＡの主心

線ａ例えば主ケーブルから引き落とされる単心線またはテープ心線から分離された単心線は、主心線ａの接続部となるコネクタＣを複数配備できる成端盤１１を経由して、さらにスプリッタモジュールＢを介して接続されるテープ心線ｂと、ＤＳ／Ｒ・ＴＤケーブルｃ及びドロップケーブルｄ，d_1 と接続されてそれぞれコネクタ接続を可能にした構成にし、これら各接続部のコネクタＣと、余長心線部とを整理する成端トレイ４，５，６とスプリッタトレイ７とが複数配備されている。（図９）

このように、光ケーブルＡの心線の接続部となるコネクタＣを備えてコネクタ接続を可能にした構成の成端トレイ４，５，６および／またはスプリッタトレイ７をクロージャ本体１に内装する光ケーブル接続用クロージャでは、前記成端トレイ４，５，６および／またはスプリッタトレイ７の各トレイに接続される心線に設けたコネクタＣを複数着脱自在に取り付けられるコネクタ取付部１４のある成端盤１１を備え、該成端盤１１に導入される単心線を外側面に湾曲して沿わせる配線保持部11_1 を形成し、該配線保持部11_1 上の心線を接離自在に押さえ込みコネクタ取付部１４に案内保持するアール状ガイド１５を回動自在に枢支すると共に、コネクタＣを着脱自在に挿入するコネクタソケット１６を介してコネクタ取付部１４に配備してある。（図２及び図３）

【００２９】

前記成端盤１１としては、ケーブル廻しで保持する内側ガイドと外側ガイドを左右に有し、湾曲外側面を持った配線保持部11_1 が形成された断面コ字状部材からなり、該配線保持部11_1 に沿ってアール状ガイド１５を軸受部15_1 によって支軸15_2 に連結し、該支軸15_2 を中心として回動自在に枢支すると共に、上部にセンタートレイ取付部14_1 と前記ガイドの閉止固定並びに開放受け止めとして用いられる係止ロック部14_2 とを設け、下部にコネクタ取付部１４とを備え、該センタートレイ取付部14_1 に固定されたセンタートレイ８内に導入される心線ａから分離した単心線を前記アール状ガイド１５によって配線保持部11_1 を経て下方に沿わせて落とし込み保持して、単心線に接続されたコネクタＣを筒状のコネクタソケット１６を介して前記コネクタ取付部１４に着脱自在に備えてある。（図３）

この成端盤１１は、前記トレイ固定ベース１０に取り付けられるが、前記クロージャ本体１内の端面板２に臨んで設けられ、導入、導出される光ケーブルＡの心線の接続に便宜よく対応するようになっている。

なお、前記アール状ガイド１５４は、先端に係止部を備えて成端盤１１に着脱自在に係止できるようにし、主心線ａの押さえ込みが確実にできるようにするのがよい。

【００３０】

前記成端盤１１のコネクタ取付部１４は、コネクタＣを挿脱自在に内装できるコネクタ収納ケース１６を嵌入しうる把持溝となる格子状のガイドリブ２４と、該ガイドリブ２４，２４間に形成された嵌合孔２５と係止孔２６に係止しうる係止片１７をコネクタソケット１６に対応して設けられていて、該コネクタソケット１６を着脱自在に配備できる構成とするのがよい。（図４及び図５）

即ち、コネクタＣをコネクタソケット１６に挿脱自在に内装してコネクタ脱着作業が簡便にできるようにするため、取付板に格子状にガイドリブ２４を複数突設し、該ガイドリブ間の取付板に嵌合孔２５を一対設け、該嵌合孔２５に係止しうる係止片１７，17_1 を備えたコネクタソケット１６を着脱自在に配備するか（図４）、またはガイドリブ２４間の取付板に嵌合孔２５と係止孔２６を設け、嵌合孔２５と係止孔２６に係止しうる係止片１７を備えたコネクタソケット１６を着脱自在に配備し（図６）、このコネクタソケット１６内にコネクタＣを挿脱自在に配備すればよい。

【００３１】

また、前記コネクタソケット１６を着脱自在に配備するには、コネクタソケット１６を取付板に沿って把持溝となるガイドリブ２４間にスライドさせつつ嵌入して係止片１７を嵌合孔２５に嵌め込んで、係止片17_1 を先方の嵌合孔２５に圧入するか係止片１７の先端部を係止孔２６に圧入ロックすればよく、さらに該コネクタソケット１６の両外側面にガイド溝２７を形成し前記ガイドリブ２４の凸条に嵌入しスライドさせて固定し、コネ

クタソケット１６の脱落防止に役立たせてある。

さらに、ドロップケーブルｄ，d_1　などの振動対策として、ドロップケーブルを固定するため、前記コネクタソケット１６に挿入したコネクタＣを固定するためコネクタ固定部材２８がコネクタ固定ベース２９に摺動自在に付設されて、成端盤１１のコネクタ取付部１４に対設され、該コネクタ固定部材２８によって、前記コネクタＣの一端を嵌挿保持して成端盤１１に装着されたコネクタＣの取り付けセット後の安全性が容易に確保でき各トレイへ安定配備ができるようになっている。（図２、図７及び図８）

【００３２】

なお、成端トレイとしては、図１０および図１１に示す如き光ケーブルＡの主心線ａの接続部を収納するコネクタ収納部4_1，5_1，6_1と、心線余長を収納する心線余長収納部4_2，5_2，6_2とをそれぞれ備えた下部伸ばし成端トレイ４、ＤＳ／Ｒ・ＴＤ成端トレイ５及びドロップ成端トレイ６をトレイ固定ベース１０に複数重ねた状態で、クロージャ本体１内に内装して光ケーブル接続用クロージャとしてあり、さらにスプリッタモジュールＢを収納するスプリッタトレイ７並びにセントートレイ８と、光ケーブルＡの主心線ａの接続部Ｃのコネクタを複数配備できる成端盤１１とを付設し、必要に応じて主心線ａの接続部を収納する接続部収納部9_1と心線余長を収納する心線余長収納部9_2とを備えた接続トレイ９がクロージャ本体１に内装してある。（図１０～図１２）

なお、前記下部伸ばし成端トレイ４及びＤＳ／Ｒ・ＴＤ成端トレイは、図１０ｂのように二層構造に設けてあるが別個に配置して用いることもできる。

【００３３】

前記光ケーブルＡの主心線ａの接続部となるコネクタＣは、着脱自在のコネクタソケットおよびコネクタプラグからなり、該コネクタＣによって成端盤１１とスプリッタトレイ７とがコネクタ接続可能に接続され、さらにスプリッタトレイ７から分離された出力心線a_1を成端トレイ例えば、下部伸ばし成端トレイ４、ＤＳ／Ｒ・ＴＤ成端トレイ５及びドロップ成端トレイ６とにコネクタ接続可能に接続される。また、ＳＳ接続の場合には成端盤１１から直接にドロップケーブルd_1として落として用いることもできる。

さらに、前記成端トレイ４，５，６並びにスプリッタトレイ７は、それぞれ複数重ねた状態でトレイ固定ベース１０に設けたトレイ収納ケース１２の摺動自在のトレイ取付部１３に、枢支部によって回動自在に枢着してクロージャ本体１内に内装されて配線処理作業がし易くできるようになっている。（図１３及び図１４）

【００３４】

前記心線ａに接続するコネクタＣは、成端盤１１のコネクタ取付部１４に複数設けてコネクタ接続を可能にした構成としたものをクロジャー本体１の端面板２に近寄せて左右に配備し、また前記スプリッタトレイ７は心線ａを接続するコネクタＣを複数設けたスプリッタモジュールＢが左右に選んで嵌入配備されてコネクタ接続を可能にしたスプリッタトレイ７に構成したものを２段配備すると共に、該スプリッタトレイ７から分離される出力心線a_1に接続するコネクタＣを複数配備してコネクタ接続を可能にした下部伸ばし成端トレイ４、ＤＳ／Ｒ・ＴＤ成端トレ５及びドロップ成端トレイ６に構成したものを多段に重ねた状態で配備して、そして各成端トレイ４，５，６をそれぞれヒンジ部によってトレイ取付部１３に回動自在に設けてクロージャ本体１内に変位自在に斜設した構成の光ケーブル接続用クロージャとした。例えば、前記スプリッタトレイ７及びドロップ成端トレイ６を含む成端トレイ４，５、６が、前記固定ベース１０に備えられたトレイ取付部１３に回動自在に階段状にずらせた多重状態下で傾斜保持するように配備されている。

なお、振動対策として、ドロップケーブルを固定するため、前記コネクタソケット１６に挿入したコネクタＣを固定するためコネクタ固定部材２８がコネクタ固定ベース２９に摺動自在に付設されて、成端盤１１のコネクタ取付部１４に対設され、該コネクタ固定部材２８によって、前記コネクタＣの一端を嵌挿保持して成端盤１１に装着されたコネクタＣの取り付けセット後の安全性が容易に確保でき各トレイへ安定配備ができるようになっている。（図２）

【００３５】

前記スプリッタトレイ７としては、複数のコネクタを備えたスプリッタモジュールＢをトレイ内の左右両側にあるモジュール取付部７$_1$　内に選択して着脱自在に設けられるもので、さらに心線余長を収納する余長収納部７$_2$　を有し心線導出部を左右に振り分けて形成したトレイとの上下二層のトレイとをヒンジ部７$_4$　によつて開閉自在に連結し係止部７$_5$　で閉止できる構成とし、枢支部７$_3$　で前記トレイ取付部１３に回動自在で着脱自在に設けてある。（図１１）

なお、前記スプリッタトレイ７は、前記成端盤１１に接続する心線ａにプラグを設けられると共に、各成端トレイ４，５，６に接続される複数の心線にソケットを設けたスプリッタモジュールＢが配備されてコネクタ接続を可能にしたスプリッタトレイ７に構成するのがよい。

【００３６】

これら前記成端トレイ４，５，６は、コネクタ収納部４$_1$　，５$_1$　，６$_1$　を左右に分けて複数備え、心線余長を収納する心線余長収納部４$_2$　，５$_2$　，６$_2$　を備えて、前記スプリッタトレイ７よりの心線を導入部で固定する把持具ベース１８または係止片部１８$_1$　を必要に応じ設けて、下部伸ばし成端トレイ４と、ＤＳ／Ｒ・ＴＤ成端トレイ５と、ドロップ成端トレイ６として、それぞれ枢支部４$_3$　，５$_3$　，６$_3$　によってトレイ取付部１３に回動自在に枢着し、各成端トレイを水平状態に保つ櫛歯１８$_2$　が多段にあるトレイ収納ケース１２に複数重ねた状態で配備するのがよく、また、前記トレイ取付部１３をトレイ収納ケース１２に摺動自在に装備して成端トレイ４，５，６とスプリッタトレイ７とを共に一括して前後にスライドできるように構成し、スライドすることでトレイ作業時の領域を確保し、前方に引きだしてからトレイを階段状にずらせた多重状態ドで傾斜保持するようにするのが好適例である。（図１３及び図１４）

このように前記前記トレイ取付部１３をスライドベース１３$_1$　を介してトレイ収納ケース１２に摺動自在に備えれば、成端トレイ４，５，６およびスプリッタトレイ７が、クロージャ本体１のスリーブを拡開した際にスリーブ外側に引き出して開くことができトレイ作業が容易に行うことができる。

【００３７】

さらに、前記成端トレイ４，５．６としては、最大４心収納でき、心線の長手方向に複数カ所のコネクタ取付部材例えば、格子状のリブを突設したコネクタ収納部４$_1$　，５$_1$　，６$_1$　と、心線余長を収納する心線余長収納部４$_2$　，５$_2$　，６$_2$　とをそれぞれ備えたものであって、接続失敗を考慮してコネクタ接続部を任意の位置に固定することが可能で、さらにコネクタ脱着時に心線の引っ張りや屈曲の発生を抑制するストッパ構造の押さえ片を形成し、ＳＳサービス（専用線ＣＢフレッツ　ベーシック）を要望する加入者へ引き落しするため単心ケーブルとドロップケーブルまたは発信ケーブルのＤＳケーブル（心線よってＤＳトレイへ接続）とのコネクタよび心線余長を心線余長収納部４$_2$　，５$_2$　，６$_2$　に保護する。

またドロップ固定部品用の把持具ベース１８または係止片部１８$_1$　をトレイ両端部または片側部に設けて、左右いずれの側からでもドロップケーブルを引き出せるようにし、しかも心線着脱時に他心線への影響をなくすために成端トレイ４，５．６の左右の心線導入口１９を心線毎の個別通路構造として心線の引っ張りや屈曲の発生を抑制する安全な構成としてある。

【００３８】

また光ケーブル接続用クロージャに備えられる前記スプリッタトレイ７は、８分岐スプリッタモジュールトレイとしてあって、ＰＯＮサービスを要望する加入者へ引き落すために単心ケーブルとＳＰ入力線の主心線ａおよびＳＰ出力線の心線ａ$_1$　とドロップケーブルｄまたはＤＳケーブルｃ（心線よってＤＳトレイへ接続）とのコネクタ接続部および心線余長ならびにスプリッタモジュールＢを収納保護するものであって、複数のコネクタＣを備えたコネクタソケットのあるスプリッタモジュールＢをスプリッタトレイ７内にモジュール取付部７$_1$　例えば、周壁リブ或いは爪部とリブとによって着脱自在に設けてあり

、またドロップ成端トレイ６では、把持具固定用の把持具ベース１８をトレイ両端部に設けて、左右いずれの側からでもドロップケーブルｄを引き出せるようにし、しかも各成端トレイ４，５，６はそれぞれＳＰ入力線のコネクタＣが左右に振り分けて固定できるコネクタ収納部4_1，5_1，６を備えた構成とすると共に、心線着脱時に他心線への影響をなくすためにトレイの左右の心線導入口１９を心線毎の個別通路構造として心線の引っ張りや屈曲の発生を抑制するストッパ構造のガイドを形成して安全な構成とした。

【００３９】

さらに、前記成端トレイ４，５，６としては、前記スプリッタトレイ７および／或いは接続トレイ９からの出側心線である心線とＤＳ心線との接続用のコネクタＣを複数設けたコネクタ接続部および心線余長を収納保護するものであって、加入者対応によりその都度、増設可能とするコネクタ固定構造でありＤＳ心線側の接続失敗余長吸収構造で、左右コネクタ方向への心線振り分けできるようにし、ＤＳ心線側のコネクタを引き抜く際に心線余長に影響を与えないようにストッパ構造の係止片部18_1で安全な構成としてある。

【００４０】

そしてこのドロップ成端トレイ６は、枢支部6_3によって回動自在で、切れ目のある軸受部に着脱自在にトレイ取付部１３に設け、各心線の接続回数により生ずる心線余長差を吸収する心線余長収納部6_2を形成し、さらにコネクタ脱着時に心線の引っ張りや屈曲の発生を抑制するストッパ構造のガイドを設けた。

またドロップ把持具固定用の把持具ベース１８をトレイ両端部に設けて、左右いずれの側からでもドロップケーブルｄ，d_1を引き出せるようにし、しかもＳＰ入力線のコネクタ接続部が左右に振り分けて固定できる構成とすると共に、心線着脱時に他心線への影響をなくすためにトレイの左右の心線導入口１９を心線毎の個別通路構造として心線の引っ張りや屈曲の発生を抑制するストッパ構造のガイドを形成して安全な構成とした。（図１０ａ）

【００４１】

なお、テープ心線ケーブルルートにクロージャを設置して単心運用するためにクロージャ中心点で切断したテープ心線と割れ入れ心線との接続部と、心線余長との収納部を形成した下部伸ばし成端トレイ４、例えば図１０ｂ示す如き片側最大４接続分の固定が可能で、コネクタＣを保持できるコネクタ収納部4_1と心線余長を吸収する心線余長収納部心線余長収納部4_2を形成して、左右いずれの側からでもテープ心線並びに割り入れ心線を引き出せるようにし、ＩＮ側或いはＯＵＴ側に振り分けて固定できる構成としてする。なお、心線を導出入する心線導出入部１９には心線押え片からなる係止片部18_1を回動自在に設けて心線を的確に保持するようにしてある。

また、この下部伸ばし成端トレイ４は、テープ心線ケーブルルートにクロージャを設置して単心運用するためにクロージャ中心点で切断したテープ心線と割り入れ心線との接続部と余長心線を収納保護するために用いられるが、主ケーブル側テープ心線余長をトレイ内に収納可能とし上部、下部側にこのトレイを配備して使用可能とするために左右対称形態とし、４心テープ分の出口を個別ルートに分割することで識別容易なものとして用いられ、ＤＳ／Ｒ・ＴＤ成端トレ５をトレイ内に組み込んだ二層形態で用いてあるが、別個形態で用いるのもよい。

【００４２】

各トレイは、合成樹脂により一体成形またはおのおの成形された成形品であり、略長方形状の外形を有し、内面側が同一或いは相似形状に形成されたもので、各トレイをトレイ固定ベース１０に載置或いはトレイ取付部１３にヒンジ部によって装着して前記クロージャ本体１内に複数一括して固定されるものである。

【００４３】

前記接続トレイ９を除きスプリッタトレイ７並びに前記成端トレイ４，５，６は、フレームからなる前記トレイ固定ベース１０に取り付けたトレイ収納ケース１２に多重状態下で水平保持するように配備されているものであって、各成端トレイ４，５，６およびスプリッタトレイ７をそれぞれ枢支部4_3，5_3，6_3，7_3によって切れ目の

ある軸受部に着脱自在で回動自在にトレイ取付部１３に嵌着されている。（図１３及び図１４）

このトレイ取付部１３は、トレイ収納ケース１２に段状にずらせた櫛歯18_2の先端近くまで移動できるように摺動自在に移動できるように備えて、スライドすることでトレイ作業時の領域を確保し、前方に引きだしてから各トレイを階段状にずらせた多重状態下で開放し傾斜保持するようにするのがよく、収納時には櫛歯18_2上に各トレイを水平状態に保って固定される。

【００４４】

前記クロージャ本体１のスリーブの両端壁嵌合部に嵌装された端面板２とを備えたクロージャ１の例で説明すると、端面板２にスペーサ（図示せず）を介して、主幹線光ケーブルＡおよび支持線が貫通されてケーブルＴＭ把持具３、支持線把持具でそれぞれ固定され、かつ、該ケーブルがケーブル把持具に接続連結されている。また、前記主幹線光ケーブルＡから導出された主心線ａは、接続トレイ９、スプリッタトレイ７の他に下部伸ばし成端トレイ４若しくは下部伸ばし成端トレイ４とＤＳ／Ｒ・ＤＴトレイ５とを併用した形態およびドロップ成端トレイ６などに処理されて引き落とし用のケーブルとして端面板２から導出されてドロップケーブルｄ，d_1或いはＤＳケーブルｃ、テープ心線ｂとして配線される。

【００４５】

図１の光ケーブル接続用クロージャをテープ心線ケーブルルートに設置し単心運用するためにクロージャ内で光ケーブルＡでのクロージャ配線では、図９に示すようにセンタートレイ８で分離された主心線ａを成端盤１１を経てスプリッタトレイ７並びに下部伸ばし成端トレイ４、ＤＳ／Ｒ・ＴＤ成端トレイ５及びドロップ成端トレイ６に接続されるが、各トレイがコネクタ接続を可能の構成にするのに、端末にコネクタプラグ並びにコネクタソケットのある心線ａ，a_1及びにドロップケーブルｄ，d_1、ＤＳケーブルｃによって接続自在の構成として光ケーブルの心線接続、収納がモジュール化した全コネクタ化したものとしてある。

【００４６】

また、前記クロージャ本体１は、ヒンジ部1_1で連続され二つ割りにできるスリーブによって構成とし、開拡するスリーブの開放状態を調節できるスリーブ開放保持具３０例えば、図２の如きリング３１及びフック３２の係止部を端末に有する連結機構を介して連継できてクロージャ本体１を締めつけクロージャの内部密封性を維持できるようにするのがよい。この場合、スリーブ開放保持具３０を用いれば作業時にスリーブを外すことなく作業側の開放状態を維持して、その開き具合も連続的に調整可能であり、作業側に障害となる部材をなくして取扱易い形態で用いられるようにするのもよい。

【００４７】

更にクロージャ本体１の両端面に備えられる端面板２にはケーブルシールアダプタを着脱自在に装着して用いるのがよい。このクロージャ本体１に備えられる端面板２は、光ケーブルＡを挿入するケーブル挿通路２１のある延長側壁部2_1を設け、各種ケーブルを挿入するケーブル挿通路２２のある部分とを二つ割りで開閉自在のケーブルアダプタ２０で構成し、該ケーブルアダプタ２０を挟持枠片２３によって着脱自在に装着してクロージャ本体１に組み込まれる。（図１５）該ケーブルシールアダプタ２０は、クロージャに収納したケーブル際の防水機能の端面シールに装着使用し、各種ケーブルを挿入するスリットとシール片とのある心線挿通路を複数設けもよく、また任意のコネクタ付きケーブルを着脱可能とした構造や、各ケーブル導入口に薄膜を付設したスリットで防水構造に構成したものを用いて安全性を図ったものを用いるのがよい。

前記クロージャ本体１に備えられる端面板２が、各種ケーブルを挿入するケーブル挿通路のある延長側壁部を設けたケーブルアダプタを着脱自在に装着したことで、作業時に前記クロージャ本体にスリーブを外すことなく開拡するスリーブの開放状態を調節できるスリーブ開放保持具を配備でき、作業側の開放状態を維持し開き具合をも連続的に可変調節可能のバンドタイプのスリーブ開放保持具を付設することもできるし、また、前記クロー

ジャ本体に備えられる端面板に延長側壁部を設けたことで、主ケーブルやドロップケーブル等の各種ケーブルを仕分けて挿入してクロージャに収容したケーブル際の防水機能のある端面シールとして用い、ドロップケーブルおよびＤＳケーブルの防水を安全に図ることができるし、各種ケーブルを挿入するケーブル挿通路のある二つ割りで開閉自在のケーブルアダプタを挟持枠片によって着脱自在に装着したことにより、主ケーブルやドロップケーブル等の各種ケーブルを仕分けて挿入してクロージャに収容したケーブル際の防水機能のある端面シールとして用い、ドロップケーブルおよびＤＳケーブルの防水を図って安全性を高め分離配線の取扱を良好にすることができる。

【００４８】

さらに、前記スプリッタトレイ７およびドロップ成端トレイ６を含む成端トレイ４，５，６をそれぞれ回動自在に取り付けるためのトレイ取付部１３は、前記トレイ固定ベース１０に配備されるが、各トレイに設ける枢支部或いはヒンジ部のピン軸が嵌入される軸受部は、例えば外方に開口するガイド溝を形成し、該ガイド溝から前記ピン軸に形成した断面狭巾部で挿脱できるようにして、トレイ取付部１３に着脱自在に配備されるピン軸の断面巾広部で係止支持されるし、開口部において断面狭巾部の所定位置で、ピン軸が外れ或いは挿入できるようにするのがよい。

【００４９】

なお、複数の前記成端トレイ４，５，６やスプリッタトレイ７をトレイ取付部１３に着脱自在にするには、単独または前後方向に交互に逆に段積み装着した積層収納したトレイとして用いてもよい。この場合、トレイ本体に突設されたピン軸のある枢支部に係合する軸受部または取付アーム部は、トレイ取付部の両側対称位置に備えればよく、該トレイをクロージャ本体１の形態では、前後いずれの方向でも着脱自在に装着できる構成とすることができ、さらにクロージャ本体１内での各トレイをスライダによって移動位置させて心線接続作業が簡便にできるようにすることもできる。

【００５０】

前記各トレイに形成した心線導出入部には、分離スリットのある心線挿通孔を設けた弾性保持部材（図示せず）を圧入嵌合して心線の支持を確実にしてあり、この弾性保持部材は、心線径或いは心線数に応じた挿通孔あるナイロンチューブや分離スリットのあるスポンジを選んで用いられる。

さらに前記コネクタ収納部、スプリッタ収納部および余長心線収納部は必要に応じガイドリブ及び側壁を選んで区画してもよいし、心線の浮きを阻止する心線押え片或いは係止爪を一体に成形して、余長心線や心線接続部となるコネクタを各トレイ内に確実に保持できるようにするか、またコネクタ収納部或いは心線余長収納部を各トレイ毎に分離整理収納し、ケーブル挿入部からファイバ心線の曲げが極少で心線収納時のねじれをも防止でき、安全かつ高密度収納で高信頼性が得られるようにすることが配慮される。

【００５１】

なお、前記センタートレイ８では、左右両端形成した心線導出入部8_1が必要に応じ格子状リブを突設して心線毎の個別通路構造として心線の引っ張りや屈曲の発生を抑制するストッパ構造のガイドに形成して、さらに単心線ａを抱持して支持するフラップ３３を取り付けるためのフラップ取付孔8_2を複数形成してある。（図３ａ）

このフラップ取付孔8_2には、心線から単心線分離した単心線を結束し得るフラップ３３を取り付け取り外し自在に配備して単心線の保護と心線識別を図るようにしてあるが、各フラップ３３が整列固定されていると任意のフラップ３３に結束さた残単心線によりドロップする場合、他のフラップ３３に結束された単心線に影響がないように着脱ができて安全な作業ができる。

また、前記フラップ３３は、図６に示すように心線嵌挿溝３４をそれぞれ有する二つ折りの抱持片連接したものからなり、突き合わせ面に対向して凹凸からなる係止部３５を設けてあり、連接部から折り曲げて単心線ａを抱持して支持できるように構成し、さらに前記フラップ取付孔8_2に挿入するフランジ付き突起３６が突設され、該突起３６が前記センタートレイ８のフラップ取付孔8_2に挿入され、センタートレイ８の表面にスライ

ドさせて着脱自在に固定でき、フラップ取り外しには、操作片３７でフラップ３３を反対方向に戻して移動すれば外すことができる。

【００５２】

前記スプリッタトレイ７においてスプリッタ処理を行う際には、スプリッタトレイ７とドロップ成端トレイ６内において、光ケーブル心線とスプリッタおよび、スプリッタとドロップケーブルの接続ができるようにしたり、スプリッタ出線の処理までを各トレイで対応するようにすることが望ましい。

いずれにしても、前記スプリッタトレイ７とドロップ成端トレイ６は、多段状のトレイ取付部１３に回動自在に保持され、図１に示すように二つ割りのスリーブからなる円筒状のクロージャ本体１内に組み込まれて用いられ、該クロージャー本体１では、前記配線処理ガイドによりテープ心線とドロップ心線との動きを分離させるのがよい。

【００５３】

前記ドロップケーブルｄ，d_1　のドロップ心線によって引き落とし分岐配線するには、両端に嵌装された端面板２を備えたクロージャ１の例で説明すると、端面板２にスペーサを介して、主幹線ケーブルＡが貫通されてケーブル把持具３で固定され、かつ、該ケーブル把持具３にケーブルのテンションメンバが接続連結されている。この主幹線ケーブルＡから分岐したテープ心線を主心線ａと、引き通し心線とに分岐し、該引き落し心線がコネクタＣの接続部を介し、成端盤１１を経由して前記スプリッタトレイ７とドロップ成端トレイ６とに挿入されて、配線接続されて用いられる。

【００５４】

以上の構成からなるスプリッタトレイ７或いはドロップ成端トレイ６において、テープ心線を単心線に分離したうち選ばれた引き落し心線は成端盤１１を介して、スプリッタトレイ７を経由してドロップ成端トレイ６のいずれか一方の心線導入口１９から入ると、心線通路を通ると共に心線余長は心線余長収納部内に入って処理される。そして出力心線a_1　を用いてコネクタプラグによって各トレイのコネクタソケットに接続されて、ドロップケーブルｄ，d_1　に接続され、必要な引き落し配線が可能となる。

【００５５】

このように、光ファイバケーブルを加入者宅等に引き落とす際に、トレイ各層が開く構造であると共に、単心に分岐するのに心線導入口の一方側から単心線を入れる場合に、心線余長収納部に収納したときは他方の心線導入口側に出すことができる。

なお、心線導入口の一方側から単心線を入れて心線余長収納部に収納する場合、単心線の巻回の仕方によって、両方の心線導入口のいずれの側にも出すこともでき、かつ心線の曲率を小さくすることなく（過負荷を加えることなく）、入口側となった心線導入口と同一の又は異なる心線導入口を出口側として出すことができる。これにより、心線の出入口側を自由に選んで、光ケーブル用クロージャ内での単心線の配線の便宜を図ることができる。

【００５６】

ここで、心線導入口には、ドロップ把持具或いは貫通穴が形成されたスポンジゴム等の弾性変形可能な弾性保持部材が把持溝に押し込む方式で設けられ、心線が保持されてドロップ成端トレイ６内に入り、かつドロップ成端トレイ６外に出る。　このようにドロップ把持具或いは弾性保持部材を心線導入口に介在させれば、心線が心線導入口を通るときに、心線がトレイ本体に擦れることや、或いは引張衝撃等を確実に防止することができる。

【００５７】

そして、前記スプリッタトレイ７や各成端トレイ４，５，６は、クロージャ本体１内のトレイ収納ケース１２にあるトレイ取付部１３に挿入して順次積み重ねられるようにして実装される。この積み重ねには、トレイ収納ケース１２で固定化し、重なり合う心線接続収納トレイ同士をネジ止め等することなく積層連結することができ、高密度収納構造の光ケーブル接続用クロージャとすることができる（図１参照）。

【００５８】

さらに、前記成端盤１１において振動対策としてドロップケーブルｄ，ｄ$_1$　を固定するため、コネクタ固定部材２８とコネクタ固定ベース２９を配備してあるが、このコネクタ固定部材２８としては、図７のようにコネクタ挿入凹部３８と心線挿通溝３９とを備えた受け部４０にコネクタ固定ベース２９に係合する断面逆Ｔ字状の連結部４１とストッパ片４２とを一体に形成した部品を用い、コネクタＣの一端即ちコネクタソケット端部を前記受け部４０に挿入して支え、コネクタ固定ベース２９の把持溝４３に連結部４１をスライドして押し込み嵌入し、ストッパ片４２でロック固定することで、ドロップケーブルｄ，ｄ$_1$　を安全に固定化することができる。

また、前記コネクタ固定ベース２９は、図８のように一端に把持溝４３を櫛状に複数形成し、この把持溝４３にコネクタ固定部材２８を着脱自在に立設する植込部４４があって、該把持溝４３に前記コネクタ固定部材２８の断面逆Ｔ字状の連結部４１をスライドして入れられ立設するようになっていて、他端に取付部４４を延設し、この取付部４４でトレイ固定ベース１０に連結して前記成端盤１１にコネクタ固定部材２８を対向配備できるように構成して、コネクタＣのあるドロップケーブルｄ，ｄ$_1$　を確実に固定維持できるようにするのがよい。（図２及び図８）

【００５９】

これら積み重ねた各成端トレイ４，５，６やスプリッタトレイ７は、それぞれ個別にトレイ取付部１３によって前方に移動可能で、引き出されたトレイの各層を所定の角度で開いて配線でき閉じてから引き戻し固定化できる構造としてあって、各トレイの出し入れや各層を開閉することによってトレイ内に収納された心線に損失などの影響が生ずることなく任意のトレイを取り出すことができる。

【００６０】

また、この前記スプリッタトレイ７や成端トレイ４，５，６を多層トレイとした場合には、Ｎｏ符号の識別番号を順次つけて配線取扱いやすくしてあり、しかも、各トレイは、トレイに内装された際に積層したトレイ間での変形しないように配慮されている。

この場合、多段に積み重ねられたドロップ成端トレイ６の中から所望のドロップ成端トレイ６をトレイ取付部１３から外したり、トレイ取付部１３を移動して引き出せ、各トレイ間の重ね合せ面を開くことができて、トレイの内面側を露出させて収納心線の点検、修理、接続の各作業が簡便に行うことができる。

さらに分離心線使用の場合には、この単心線とドロップケーブルｄ，ｄ$_1$　とを接続後にトレイ収納するが、ドロップ成端トレイ６に導入されたテープ心線は弾性保持材で固定されＮｏ．１～４までに分岐されそれぞれのトレイに整理配線されてトレイ収納ケース１２に収納され、トレイ固定ベース１０に固定された状態でクロージャ本体１内に保護されて用いられる。

【００６１】

前記弾性保持部材は心線径或いは心線数に応じた挿通孔のあるものを選んで用いられ、さらに接続部収納部及び心線余長収納部は、必要に応じガイドリブ及び側壁を選んで区画してもよいし、心線の浮きを阻止する心線押え片或いは係止爪を一体成形して余長の心線や心線接続部となるコネクタＣをドロップ成端トレイ６内のコネクタ収納部６$_1$　に確実に把持溝に押し込み方式で保持できるようにし、各スプリッタトレイ７や他の成端トレイ５，４も同様にしてトレイ３毎に心線を分離整理収納し、ケーブル挿入部からファイバ心線の曲げが極少で心線収納時のねじれをも防止でき、安全かつ高密度収納で高信頼性が得られるようにする。

【００６２】

これら実施例で用いられるコネクタ接続を可能にした構成の各トレイ、例えばスプリッタトレイ７或いはドロップ成端トレイ６並びにＤＳ／Ｒ・ＴＤ成端トレイ５および下部伸ばし成端トレイ４などを位置変換して配線処理できるので、光需要に際して任意のクロージャにて本線から必要な単心線のみを引落としたり、本線に戻したりすることが容易にでき、多心光ファイバテープ心線から光ファイバ単心線に分離して１心線のみ又はそれ以上を選んで引き落しケーブルに接続して、他は引き通し光ファイバ単心線として下部に送り

込めるように保有しておくことが可能となる。また接続作業に必要な余長心線は、任意のドロップ心線用トレイを開いて、或いは取り出したりして接続部と共に収納しておけ、空いている心線はその後のユーザーの加入など必要な単心線として安全に用いることができる。

【００６３】

またこの実施例で付設される成端トレイ４，５，６およびスプリッタトレイ７が、前記トレイ収納ケース１２にスライドベースを介して摺動自在に備えられるものであって、各トレイを単心分離作業スペースより移動回避させて、単心分離作業時での導線が見やすく配線作業を容易で迅速に処理することができ、また単心線を安全に保護することができるし、各トレイを自由に取付位置可能で心線の引き落しができるので、架空ループ配線にも容易に対応可能であると共に、一旦分岐した心線を再度本線に戻すこともできるなど、単心の分離、保護、収納作業を大幅に向上できる。

【００６４】

さらにこの実施例によれば、成端トレイ４，５，６およびスプリッタトレイ７が、前記トレイ取付部１３に回動自在に設け、トレイ収納ケース１２に多重状態下で保持するように配備されている構成としたので、クロージャのコンパクト化に寄与し、さらに機能要求に対して必要となる各トレイを簡便に追加増設、撤去できるようにして単心線ごとの接続機能とドロップ機能とを統合して安全に整理することができるし、架空乃至地上ケーブルと、ドロップ光ファイバケーブル或いは集合ドロップ光ファイバケーブルの接続のために有効に用いられ、光ケーブルの接続部を保護して、心線余長を収納し、心線の使用効率を高め単心運用と、作業施工性にも優れた光ケーブル接続用クロージャにすることができる。

【００６５】

さらに、実施形態の成端トレイ４，５，６およびスプリッタトレイ７などのトレイ構成では、コネクタ接続を可能にした構成であって、各トレイでのモジュール化を含めたオールコネクタ化により接続作業や心線収納作業並びに接続状況の点検補修などの保守作業が容易に実施できて施工性に優れ、単心線ごとの接続機能とドロップ機能とを統合して整理収納並びに心線ごとの増減も簡単にで、増設も楽できわめてコンパクトに接続部を収納することができるなど取扱い簡便な光ケーブル接続用クロージャとすることができる。

しかも、複数枚重ねられた各トレイは光ケーブルの伝送特性に悪影響を与えることなく、光ケーブルの接続や切り替え或いは分岐接続作業や再収集作業が容易に実施でき、心線接続作業後に任意の収納トレイを開いて収納されている光ファイバ心線を迅速に取り出すことができ、心線識別も容易で接続部の再調整や修理など簡単に行うことができ、その作業性を大幅に向上することができる。

【００６６】

また各トレイの組み合わせによれば、コネクタ付き心線を用いることによって心線の分岐、引込の際に各成端トレイや接続トレイへの心線導出入の自由度があって作業上、心線接続部へのアクセスが簡便化でき、管理や組立分解作業も容易に行なえ、かつ高密度・高信頼性が得られる。殊に、接続したい空き単心線とドロップ心線とを接続して、残りは現用または空き心線として下部に送り込めるように保有しておくことが可能となるし、また空いている心線はその後のユーザーの加入など必要な単心線として使用することができ、かつ単心に分離した心線の保護とも簡易にすることができ、そのほか他の心線の接続作業や接続状況の点検、補修、確認、調整など作業をも統合してきわめて容易に行うことができる。

【００６７】

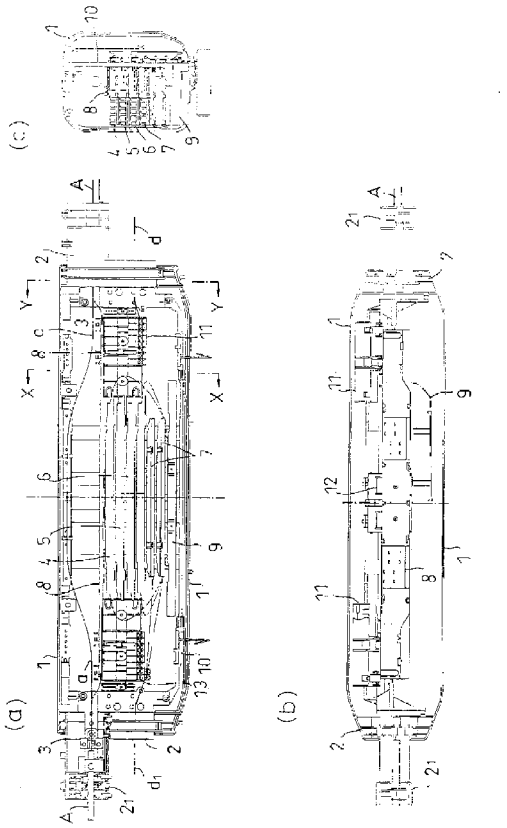
さらにまた、この実例ではキャリアチェンジなどにより他機能のトレイに切替え必要とした場合、コネクタ接続およびケーブルシールアダプタを用いることにより、従来の融着接続及びメカニカルスプライス接続時に生じた心線切り縮み、心線余長処理作業をなくし簡便化を図ることができるようにした。

【図面の簡単な説明】

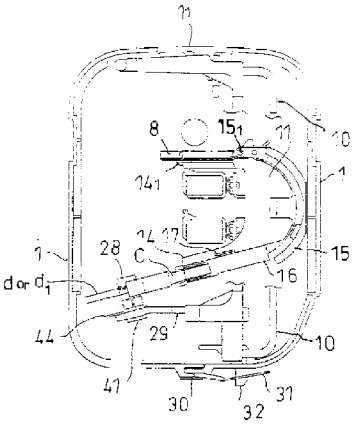
【００６８】
【図１】本発明の実施例の一使用状態を示し、（ａ）はその縦断面図、（ｂ）は横断面図、（ｃ）はＸ－Ｘ線における正面図である。
【図２】図１におけるＹ－Ｙ線における拡大正面図である。
【図３】図１の例で用いれる成端盤を示し、（ａ）はその一部の平面図、（ｂ）はその使用状態の正面図、（ｃ）は（ｂ）図の作用状態を示す正面図である。
【図４】図３（ｂ）におけるコネクタ取付部の一部を拡大して示し、（ａ）はＡ矢視図、（ｂ）はＢ矢視図、（ｃ）はその操作状態を示す平面図、（ｄ）はその操作状態を示す側面図、（ｅ）はその分離作用状態を示す側面図である。
【図５】図３（ｂ）における他の例のコネクタ取付部の一部を拡大して示し、（ａ）はＡ矢視図、（ｂ）はＢ矢視図、（ｃ）はその操作状態を示す平面図、（ｄ）はその分離作用状態を示す側面図である。
【図６】図１の例で用いられるフラップを示し、（ａ）はその展開状態の平面図、（ｂ）はその側面図、（ｃ）はその底面図、（ｃ）はその正面図である。
【図７】図１の例で用いられるコネクタ固定部材を示し、（ａ）はその平面図、（ｂ）その正面図、（ｃ）はその側面図である。
【図８】図１の例で用いられるコネクタ固定ベースを示し、（ａ）はその平面図、（ｂ）はその正面図、（ｃ）はその側面図、（ｄ）はＺ－Ｚ線における縦断面図である。
【図９】図１の例の配線系統説明図である。
【図１０】図１の例で用いられる成端トレイを示し、（ａ）はドロップ成端トレイの平面図、（ｂ）はＤＳ／Ｒ・ＴＤ成端トレイを下部伸ばし成端トレイに組み込んだ状態の平面図である。
【図１１】図１の例で用いられるスプリッタトレイの分離状態を示す平面図である。
【図１２】図１の例で用いられる接続トレイを示し、（ａ）はその平面図、（ｂ）はその側面図、（ｃ）はその正面図である。
【図１３】図１の例で用いられるトレイ収納ケースを示し、（ａ）はその平面図、（ｂ）はその側面図である。
【図１４】図１２の例で用いられるトレイ取付部の作用状態を示し、（ａ）はその移動操作時の正面図、（ｂ）そのその収納操作時の正面図である。
【図１５】図１の例で用いられる端面板を示し、（ａ）はその正面図、（ｂ）はその平面図、（ｃ）はその側面図である。
【符号の説明】
【００６９】
Ａ　光ケーブル
Ｂ　スプリッタルジュール
Ｃ　コネクタ
ａ　主心線
a_1　出力心線
ｂ　テープ心線
ｃ　ＤＳケーブル
ｄ，d_1　ドロップケーブル
１　クロージャ本体
２　端面板
３　ケーブルＴＭ把持具
４，５，６，　成端トレイ

41 , 51 , 61 , コネクタ収納部
42 , 52 , 62 心線余長収納部
43 , 53 , 63 枢支部
7 スプリッタトレイ
8 センタートレイ
9 接続トレイ
9 アダプタ
10 トレイ固定ベース
11 成端盤
111 配線保持部
12 トレイ収納ケース
13 トレイ取付部
131 スライドベース
14 コネクタ取付部
141 センタートレイ取付部
142 係止ロック部
15 アール状ガイド
151 支軸
152 軸受部
16 コネクタソケット
17 係止片
18 把持具ベース
19 心線導入口
20 ケーブルアダプタ
21, 22 ケーブル挿通路
23 挟持枠片
24 ガイドリブ
25 嵌合孔
26 係止孔
27 ガイド溝
28 コネクタ固定部材
29 コネクタ固定ベース
30 スリーブ開放保持具
31 リング
32 フック
33 フラップ
34 心線嵌挿溝
35 係止部
36 突起
37 操作片
38 コネクタ挿入凹部
39 心線挿通溝
40 受け部
41 連結部
42 ストッパ片
43 把持溝
44 植込部
45 取付部

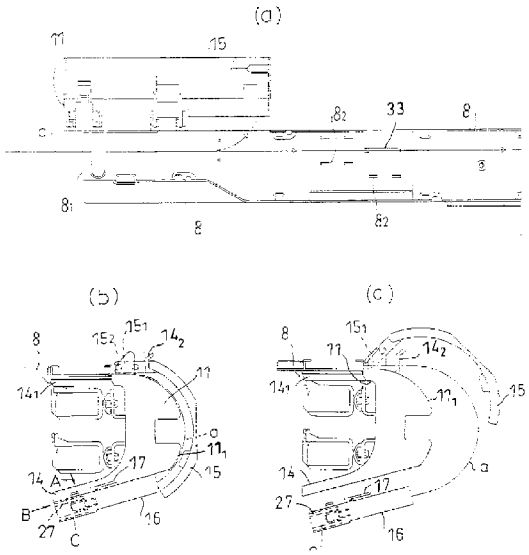
【図１】



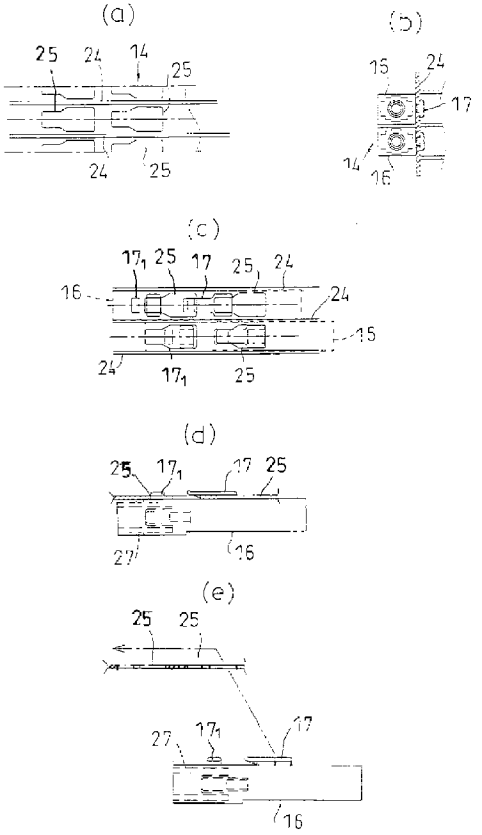
【図２】



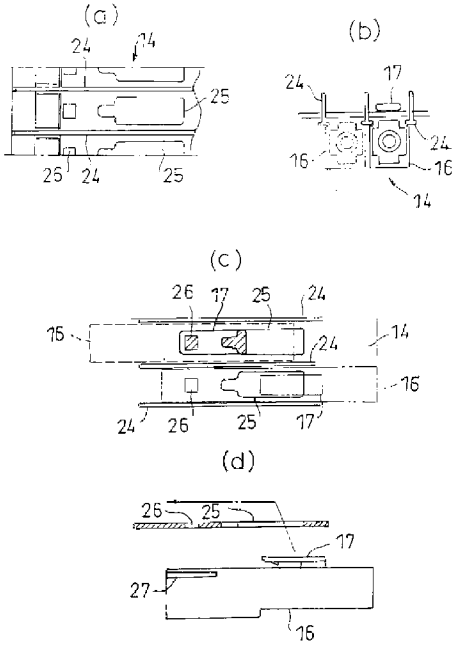
【図３】



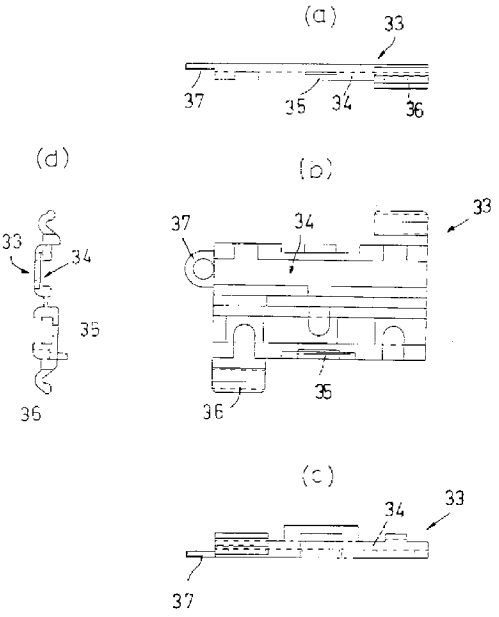
【図４】



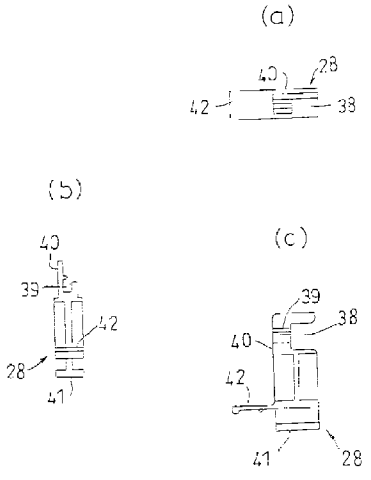
【図５】


(a)
24
14
25
25
24
25
(b)
17
24
16
24
16
14
(c)
26
17
25
24
16
14
24
16
24
26
25
17
(d)
26
25
17
27
16

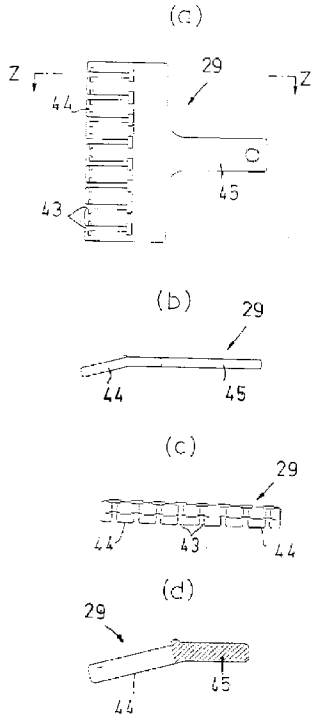
【図６】


(a)
33
37
35
34
36
(d)
33
34
35
36
(b)
37
34
33
35
36
(c)
34
33
37

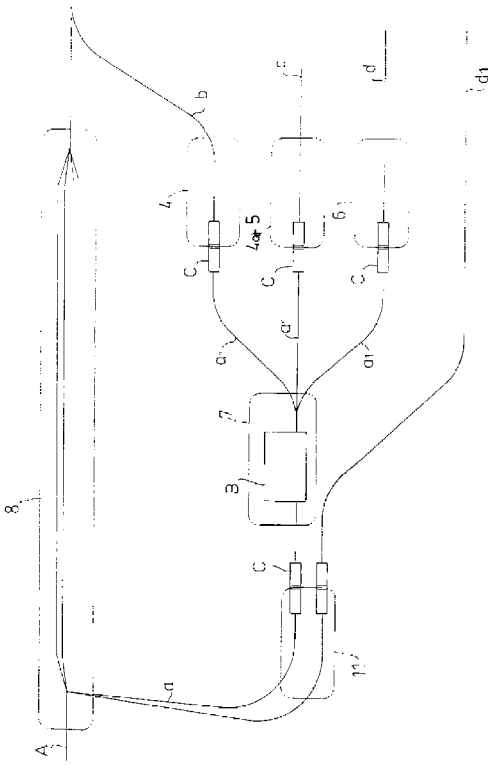
【図７】


(a)
40
28
42
38
(b)
40
39
42
28
41
(c)
39
38
40
42
41
28

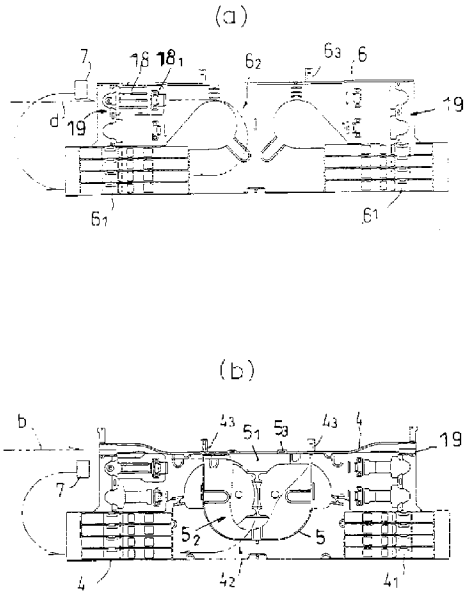
【図８】


(c)
Z
29
Z
44
C
45
43
(b)
29
44
45
(c)
29
44
43
44
(d)
29
45
44

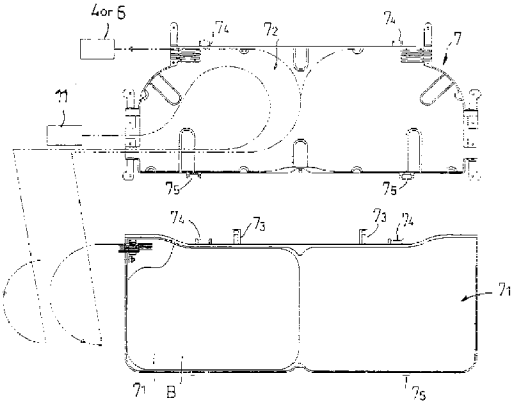
【図９】



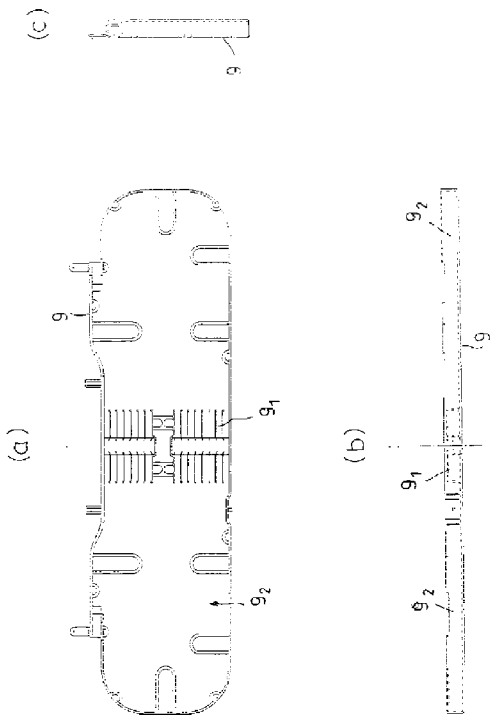
【図１０】



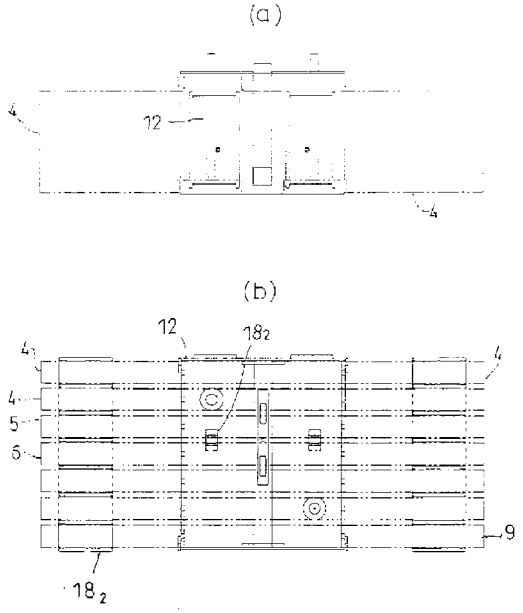
【図１１】



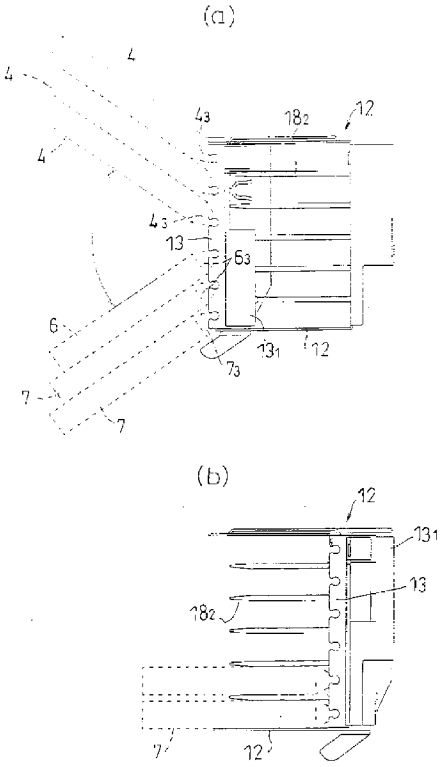
【図１２】



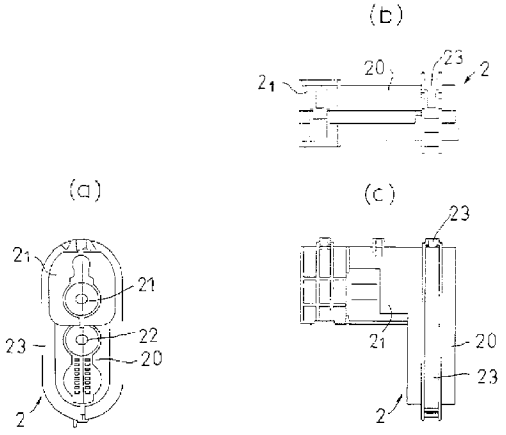
【図１３】


(a)
12
4
4
(b)
12
18₂
4₁
4
4
5
6
9
18₂

【図１４】


(a)
4
4
4
4₃
18₂
12
13
6₃
6
13₁
12
7₃
7
7
(b)
12
13₁
13
18₂
7
12

【図１５】


(b)
20
23
2
2₁
(a)
21
21
22
23
20
2
(c)
23
21
20
23
2

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Electronic Patent Application Fee Transmittal

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Filing Date:	19-Jan-2018
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Filer:	Julie Katherine Skoge/Kristine Wacek
Attorney Docket Number:	02316.2584US22/ADC003176

Filed as Large 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:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 1ST REQUEST	1801	1	1300	1300
		Total in USD ($)		**1300**

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Application Number:	15875564
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First Named Inventor/Applicant Name:	Scott C. Kowalczyk
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Filer:	Julie Katherine Skoge/Kristine Wacek
Filer Authorized By:	Julie Katherine Skoge
Attorney Docket Number:	02316.2584US22/ADC003176
Receipt Date:	05-AUG-2019
Filing Date:	19-JAN-2018
Time Stamp:	15:30:37
Application Type:	Utility under 35 USC 111(a)

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RAM confirmation Number	E201985F31341267
Deposit Account	132725
Authorized User	Kristine Wacek

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37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

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1	Request for Continued Examination (RCE)	2019-08-05-RCE-02316-2584US22.PDF	1349957 d7f6e5efb51affaa21a13cfdeef55faeadf4473d	no	3
Warnings:					
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2	Information Disclosure Statement (IDS) Form (SB08)	2019-08-05-IDS-3-02316-2584US22.PDF	1035307 a14d5f000c42f9404ea7ab08197042671725 1f01	no	6
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3	Foreign Reference	JP2007-121598A-w-Eng-Abs.PDF	1489070 16fb85fb23ee8289d8416500edf47acc4373efd3	no	26
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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.

New International Application Filed with the USPTO as a Receiving Office

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

142510 7590 05/09/2019

M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

EXAMINER
ULLAH, AKM E

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 05/09/2019

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

TITLE OF INVENTION: FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0.00	$0.00	$1000	08/09/2019

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE 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.

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.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

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.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

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)

142510 7590 05/09/2019
M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

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.

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.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

TITLE OF INVENTION: FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0.00	$0.00	$1000	08/09/2019

EXAMINER	ART UNIT	CLASS-SUBCLASS
ULLAH, AKM E	2874	385-135000

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,
(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.

1 _____
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)

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. _____

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 _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176	6390

142510 7590 05/09/2019

M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

EXAMINER	
ULLAH, AKM E	
ART UNIT	**PAPER NUMBER**
2874	

DATE MAILED: 05/09/2019

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. 15/875,564	Applicant(s) Kowalczyk et al.	
	Examiner Akm E Ullah	Art Unit 2874	AIA (FITF) Status No

-- 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 9/26/2018.
   ☐ 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 1-20 . 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 areply 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 _____.

/AKM E ULLAH/
Primary Examiner, Art Unit 2874

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

None of the references disclose alone or in combination a fiber optic enclosure comprising: a housing including a cover at a front of the housing, the cover being movable between an open position and a closed position; the housing defining a cable opening for routing a subscriber cable into the housing;

a spool mountable to the housing and positionable within the housing; a fiber optic cable spooled about a spooling portion of the spool, the fiber optic cable including at least one optical fiber; a fiber optic connector coupled to the at least one optical fiber of the fiber optic cable;

a fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port;

the fiber optic cable being payable from the spool while the spool is mounted to the housing, wherein the spool rotates relative to the housing about an axis of rotation as the fiber optic cable is paid out from the spool, and wherein the fiber optic connector rotates in concert with the spool as the fiber optic cable is paid out from the spool; and

wherein access for plugging a connectorized end of the subscriber cable into the second connector port of the fiber optic adapter is: a) available from the front of the housing when the cover is in the open position; and

b) not available from the front of the housing when the cover is in the closed position.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akm Enayet Ullah whose telephone number is (571)272-2361. The examiner can normally be reached on M-TH: 6AM - 10 PM.

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, Uyen-Chau Le can be reached on 571-272-2397. 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 http://pair-direct.uspto.gov. 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.

/AKM E ULLAH/
Primary Examiner, Art Unit 2874

Notice of References Cited	Application/Control No. 15/875,564	Applicant(s)/Patent Under Reexamination Kowalczyk et al.	
	Examiner Akm E Ullah	Art Unit 2874	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-7756379-B2	07-2010	Kowalczyk; Scott C.	G02B6/4441	385/135
*	B	US-7869682-B2	01-2011	Kowalczyk; Scott C.	G02B6/4441	385/134
*	C	US-8265447-B2	09-2012	Loeffelholz; Todd	G02B6/4457	385/135
*	D	US-9995898-B2	06-2018	Krampotich; Dennis	G02B6/4452	1/1
*	E	US-10234648-B2	03-2019	Kowalczyk; Scott C.	G02B6/4441	1/1
*	F	US-20140219622-A1	08-2014	Coan; Jonathan Walter	G02B6/445	385/135
	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.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	Akm E Ullah	2874

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS										
☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	05/02/2019								
	1	=								
	2	=								
	3	=								
	4	=								
	5	=								
	6	=								
	7	=								
	8	=								
	9	=								
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	11	=								
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	13	=								
	14	=								
	15	=								
	16	=								
	17	=								
	18	=								
	19	=								
	20	=								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	Art Unit
	Akm E Ullah	2874

CPC - Searched*		
Symbol	Date	Examiner
G02B6/46, 445, 4457, 4441, 4446, 4471, 3897, 4452, 4453, 4454	05/02/2019	AU

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
385	135	05/02/2019	AU

* 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
EAST, ASSIGNEE and INVENTOR	05/02/2019	AU

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
G02B	6/$ and Text limited search	05/02/2019	AU

/AKM E ULLAH/ Primary Examiner, Art Unit 2874	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	**Art Unit**
	Akm E Ullah	2874

CPC						
Symbol					**Type**	**Version**
G02B	/	6	/	4457	F	2013-01-01
G02B	/	6	/	4441	I	2013-01-01
G02B	/	6	/	445	I	2013-01-01
G02B	/	6	/	4446	I	2013-01-01
G02B	/	6	/	4471	I	2013-01-01
G02B	/	6	/	3897	I	2013-01-01
G02B	/	6	/	4452	I	2013-01-01
G02B	/	6	/	4453	I	2013-01-01
G02B	/	6	/	4454	I	2013-01-01
G02B	/	6	/	46	I	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/AKM E ULLAH/ Primary Examiner, Art Unit 2874	02 May 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

U.S. Patent and Trademark Office — Part of Paper No.: 20190502

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	**Art Unit**
	Akm E Ullah	2874

INTERNATIONAL CLASSIFICATION					
CLAIMED					
G02B	/	6	/	38	
G02B	/	6	/	46	

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
385	135

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

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/AKM E ULLAH/ Primary Examiner, Art Unit 2874	02 May 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/875,564	Kowalczyk et al.
	Examiner	**Art Unit**
	Akm E Ullah	2874

☑ 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		10		19										
	2		11		20										
	3		12												
	4		13												
	5		14												
	6		15												
	7		16												
	8		17												
	9		18												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/AKM E ULLAH/ Primary Examiner, Art Unit 2874	02 May 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

U.S. Patent and Trademark Office

Part of Paper No.: 20190502

EAST Search History

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L26	90	(access adj5 plug$4 with cover).clm.	USPAT	OR	OFF	2019/05/02 17:56
L27	714	(hinge with cover with pivot).clm.	USPAT	OR	OFF	2019/05/02 17:56
L28	29	((fiber adj3 optic adj3 adapter)same(connector adj3 port)).clm.	USPAT	OR	OFF	2019/05/02 18:01
L29	0	(spoon adj3 mountable)and (fiber adj2 optic adj2 cable with spool$4).clm.	USPAT	OR	OFF	2019/05/02 18:01
L30	0	26 and 27 and 28	USPAT	OR	OFF	2019/05/02 18:02
L31	0	26 and 27	USPAT	OR	OFF	2019/05/02 18:02
L32	0	27 and 28	USPAT	OR	OFF	2019/05/02 18:02
L33	83	(fiber adj2 optic adj2 enclosure).clm.	USPAT	OR	OFF	2019/05/02 18:03
L34	750	(spool adj3 mount$4 with housing).clm.	USPAT	OR	OFF	2019/05/02 18:04
L35	312	(fiber adj3 optic adj5 connect$4 adj5 coupl$4).clm.	USPAT	OR	OFF	2019/05/02 18:05
L36	424	(spool adj3 mount$4 with housing with rotat$4).clm.	USPAT	OR	OFF	2019/05/02 18:06
L37	0	33 and 34 and 35 and 36	USPAT	OR	OFF	2019/05/02 18:06
L38	8	33 and 34	USPAT	OR	OFF	2019/05/02 18:06
L39	0	35 and 36	USPAT	OR	OFF	2019/05/02 18:06
L40	4	34 and 35	USPAT	OR	OFF	2019/05/02 18:10
L41	424	34 and 36	USPAT	OR	OFF	2019/05/02 18:10

5/2/2019 6:12:16 PM
C:\Users\aullah\Documents\EAST\Workspaces\16028263.wsp

S/N NEW FILING PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	KOWALCZYK ET AL.	Examiner:	UNKNOWN
Serial No.:	HEREWITH	Group Art Unit:	UNKNOWN
Filed:	NEW FILING	Docket No.:	02316.2584US22
Title:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL		

Filed via EFS-Web

INFORMATION DISCLOSURE STATEMENT (37 C.F.R. § 1.97(b))

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

142510
PATENT TRADEMARK OFFICE

Attention: Commissioner for Patents

With regard to the above-identified application, the items of information listed on the enclosed Form 1449 are brought to the attention of the Examiner.

This statement should be considered because it is submitted within three months of the filing date of the above-identified application, which is not an application under 37 C.F.R. § 1.53(d). Accordingly, no fee is due for consideration of the items listed on the enclosed Form 1449.

In accordance with 37 C.F.R. §1.98(a)(2) and §1.98(d), a copy of each foreign patent and/or a copy of each publication, other than U.S. patents and U.S. patent application publications, has been provided only for those items listed on the enclosed Form 1449 that have not previously been cited by or submitted to the U.S. Patent and Trademark Office in parent applications, U.S. Serial No. 15/470,311 filed on March 27, 2017; U.S. Serial No. 14/979,870 filed on December 28, 2015; U.S. Serial No. 14/539,459 filed on November 12, 2014; U.S. Serial No. 14/132,691 filed on December 18, 2013; U.S. Serial No. 13/924,191 filed on June 21, 2013; U.S. Serial No. 13/479,015 filed on May 23, 2012; U.S. Serial No. 13/032,337 filed on February 22, 2011; U.S. Serial No. 12/793,556 filed on June 3, 2010; and U.S. Serial No. 12/182,705 filed on July 30, 2008.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.E.H/

No representation is made that a reference is "prior art" within the meaning of 35 U.S.C. §§ 102 and 103 and Applicants reserve the right, pursuant to 37 C.F.R. § 1.131 or otherwise, to establish that the reference(s) are not "prior art."

Consideration of the items listed is respectfully requested. Pursuant to the provisions of M.P.E.P. 609, it is requested that the Examiner return a copy of the attached Form 1449, marked as being considered and initialed by the Examiner, to the undersigned with the next official communication.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
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(612) 332-5300

Date: January 19, 2018

/David G. Schmaltz/
David G. Schmaltz
Reg. No. 39,828
DGS:PLSkaw

Date Filed: JANUARY 19, 2018 Sheet 1 of 15

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 02316.2584US22	Application Number: NEW FILING
	Inventor: KOWALCZYK ET AL.	
	Filing Date: HEREWITH	Group Art Unit: UNKNOWN

U.S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
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EXAMINER /AKM E ULLAH/	DATE CONSIDERED 05/02/2019

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.

*Substitute Disclosure Statement Form (PTO-1449) Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.E.U/

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	Inventor: KOWALCZYK ET AL.	
	Filing Date: HEREWITH	Group Art Unit: UNKNOWN

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	Filing Date: HEREWITH	Group Art Unit: UNKNOWN

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FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 02316.2584US22	Application Number: NEW FILING
	Inventor: KOWALCZYK ET AL.	
	Filing Date: HEREWITH	Group Art Unit: UNKNOWN

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		Complaint, CommScope Technologies LLC v. Clearfield, Inc., Case No. 0:17-cv-00307, 77 pages (January 31, 2017)
		Complaint Exhibit G, CommScope Technologies LLC v. Clearfield, Inc., Case No. 0:17-cv-00307- PJS-BRT, 3 pages (January 31, 2017)
		Complaint Exhibit H, CommScope Technologies LLC v. Clearfield, Inc., Case No. 0:17-cv-00307-PJS-BRT, 3 pages (January 31, 2017)
		Defendant Clearfield Inc.'s Invalidity Claim Chart Exhibit 10, CommScope Technologies LLC v. Clearfield, Inc., Case No. 0:17-cv-00307-PJS-BRT, 36 pages (October 6, 2017)
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	Filing Date: HEREWITH	Group Art Unit: UNKNOWN

		Plaintiff's Notice of Dismissal relating to Civil Action No. 5:11-cv-02509-JS, ADC Telecommunications, Inc v. Opterna Am, Inc. filed July 12, 2011 (1 page).
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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	216	((("KOWALCZYK") near3 ("Scott")) OR (("COAN") near3 ("Jonathan")) OR (("KAML") near3 ("Jonathan"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/02 17:38
L2	216	((("KOWALCZYK") near3 ("Scott")) OR (("COAN") near3 ("Jonathan")) OR (("KAML") near3 ("Jonathan"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/02 17:39
L3	440458	G02B6/$.cpc.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:40
L4	216	((("KOWALCZYK") near3 ("Scott")) OR (("COAN") near3 ("Jonathan")) OR (("KAML") near3 ("Jonathan"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/02 17:40
L5	216	((("KOWALCZYK") near3 ("Scott")) OR (("COAN") near3 ("Jonathan")) OR (("KAML") near3 ("Jonathan"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/02 17:41
L6	216	((("KOWALCZYK") near3 ("Scott")) OR (("COAN") near3 ("Jonathan")) OR (("KAML") near3 ("Jonathan"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/02 17:41
L7	140	(jonathan near2 coan).in.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:42
L8	211	(jonathan near2 kaml).in.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:43
L9	1055	(fiber adj2 optic adj3 enclosure)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:43
L10	0	(spoon adj3 mountable)and (fiber adj2 optic adj2 cable with spool$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:45
L11	0	(spoon adj3 mount$4)and(fiber adj2 optic adj2 cable with spool$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT;	OR	OFF	2019/05/02 17:45

			IBM_TDB			
L12	1010	(fiber adj2 optic adj2 cable with spool$4)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:45
L13	250	(fiber adj3 optic adj3 adapter)same (connector adj3 port)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:46
L14	1079	(access adj5 plug$4 with cover)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:47
L15	1579441	(hinge wiyh cover with pivot)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:48
L16	8143	(hinge with cover with pivot)	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:48
L17	1	12 and 13 and 15 and 16	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:49
L18	52	3 and 4 and 7 and 9	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:50
L19	1	13 and 14 and 15 and 16	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:50
L20	3	13 and 14 and 18	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:52
L21	3	13 and 14 and 15	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:52
L22	0	("2018/0143389").URPN.	USPAT	OR	OFF	2019/05/02 17:53
L23	43	3 and 6 and 7 and 8	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 17:53
L24	43	9 and 23	US-PGPUB;	OR	OFF	2019/05/02

			USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB			17:53

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Date Filed: SEPTEMBER 26, 2018 Sheet 1 of 4

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 02316.2584US22/ADC003176	Application Number: 15/875,564
	Inventor: KOWALCZYK ET AL.	
	Filing Date: 01/19/2018	Group Art Unit: 2874

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EXAMINER /AKM E ULLAH/	DATE CONSIDERED 05/02/2019

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	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	1-123203 A	05/16/1989	JP			Abstract	
	11-87006 A	03/30/1999	JP			Abstract	

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

		Defendant Clearfield Inc.'s Revised Preliminary Invalidity Claim Charts and Disclosures, Civil Action No. 17-cv-00307-PJS-BRT, 51 pages (December 11, 2017)
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PAT-NO: JP401123203A
DOCUMENT-IDENTIFIER: JP 01123203 A
TITLE: OPTICAL CABLE CONNECTING BOX FOR WIRING IN ROOM
PUBN-DATE: May 16, 1989

INVENTOR-INFORMATION:

NAME	COUNTRY
MIYAKE, HIDEJI	
TANABE, ETSUO	
UJINO, TADASHI	
ITO, KEIICHI	

ASSIGNEE-INFORMATION:

NAME	COUNTRY
FURUKAWA ELECTRIC CO LTD:THE	N/A

APPL-NO: JP62282325
APPL-DATE: November 9, 1987

INT-CL (IPC): G02B006/38

ABSTRACT:

PURPOSE: To improve appearance and to prevent malfunction of an opening/ closing cap by embedding a box body into a floor, etc., and exposing the same only on the base plate side of said body and prohibiting the operation of a locking mechanism for the opening/closing cap unless the revolving shaft thereof is rotated.

CONSTITUTION: This connecting box has the flush type box body 2 which has an optical cable leading-in hole 3, the base plate 7 which is mounted to the box body 2 so as close an aperture 9 thereof, the opening/closing cap 10 which is supported freely openably and closably at one end to the aperture of the base plate, a spring which energizes the opening/closing cap toward an open direction, and the locking mechanism 18 which is assembled to the rear face of the base plate and locks the opening/closing cap in the open or close state while the opening/closing cap is in either state. The box body is thereby embedded into a floor, etc., and only the base plate side thereof is exposed. The locking mechanism executes the control to rotate a locking lever to a locking state or unlocking state when the revolving shaft is rotated. The appearance is thereby improved and the control is executed only when needed. The malfunction is thus prevented.

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IPR2025-01119
Belden EX1005

⑲日本国特許庁（JP）　⑪特許出願公開

⑫公開特許公報（A）　平1－123203

⑤1Int.Cl.⁴　識別記号　庁内整理番号　⑬公開　平成1年(1989)5月16日
G 02 B　6/38　Z－8507－2H

審査請求　未請求　発明の数 1　（全5頁）

⑤4発明の名称　室内配線用光ケーブル接続箱

⑳特　願　昭62－282325
㉒出　願　昭62(1987)11月9日

⑦2発明者　三宅　秀次　千葉県市原市八幡海岸通6　古河電気工業株式会社千葉電線製造所内
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⑦2発明者　宇治野　正　千葉県市原市八幡海岸通6　古河電気工業株式会社千葉電線製造所内
⑦2発明者　伊藤　恵一　千葉県市原市八幡海岸通6　古河電気工業株式会社千葉電線製造所内
⑦1出願人　古河電気工業株式会社　東京都千代田区丸の内2丁目6番1号
⑦4代理人　弁理士　松本　英俊

明　細　書

1．発明の名称

室内配線用光ケーブル接続箱

2．特許請求の範囲

光ケーブル引込穴を有する埋込型箱本体と、前記埋込型箱本体の開口部を塞いで取付けられている基板と、前記基板の開口部に片持ち支持で開閉自在に支持された開閉蓋と、前記開閉蓋を開方向に付勢しているスプリングと、前記基板の裏面に組付けられていて前記開閉蓋が開又は閉状態にあるときその各状態で該開閉蓋をロックするロック機構とを備え、前記ロック機構は前記基板にあけられた段付セット穴に上端のドライバー溝を有する端部を臨ませて回転自在にセットされた回転軸と、前記回転軸の外周に嵌合され且つ該回転軸の下端を底部から外部に導出させたケーシングと、前記ケーシング内で前記回転軸の外周に嵌合されて一端が該回転軸に係止され他端が前記ケーシングに係止されたスプリングと、前記ケーシングの底部から導出された前記回転軸に基端が固定されていて待機状態で前記開閉蓋を閉状態又は開状態にロックするロックレバーと、前記ケーシングに設けられて前記ロックレバーの回転範囲を規制するレバーストッパー部とにより構成されていることを特徴とする室内配線用光ケーブル接続箱。

3．発明の詳細な説明

［産業上の利用分野］

本発明は、例えば床下に配線された光ケーブルと室内の機器につながる光ケーブルとをつなぐ室内配線用光ケーブル接続箱に関するものである。

［従来技術］

従来のこの種の室内配線用光ケーブル接続箱は、床面上に設置される構造であり、またこの接続箱の開閉蓋は前後に直線移動するロックレバーでロックされる構造であった。

［発明が解決しようとする問題点］

しかしながら、このような構造では全体的に床面上に露出されているので、美観が悪い問題点があった。また、従来の構造では、開閉蓋をロックするロック機構のロックレバーが前後に直線移動

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する構造であるため、足の移動とか机の移動とかの自然な動きがたまたま加えられたとき、ロックが外れてしまう問題点があった。

本発明の目的は、美観を向上でき、且つ不自然なときにロックが外れるのを防止できる室内配線用光ケーブル接続箱を提供することにある。

〔問題点を解決するための手段〕

上記の目的を達成するための本発明の構成を説明すると、本発明の室内配線用光ケーブル接続箱は、光ケーブル引込穴を有する埋込型箱本体と、前記埋込型箱本体の開口部を塞いで取付けられている基板と、前記基板の開口部に片持ち支持で開閉自在に支持された開閉蓋と、前記開閉蓋を開方向に付勢しているスプリングと、前記基板の裏面に組付けられていて前記開閉蓋が開又は閉状態にあるときその各状態で該開閉蓋をロックするロック機構とを備え、前記ロック機構は前記基板にあけられた段付セット穴に上端のドライバー溝を有する端部を臨ませて回転自在にセットされた回転軸と、前記回転軸の外周に嵌合され且つ該回転軸の下端を底部から外部に導出させたケーシングと、前記ケーシング内で前記回転軸の外周に嵌合されて一端が該回転軸に係止され他端が前記ケーシングに係止されたスプリングと、前記ケーシングの底部から導出された前記回転軸に基端が固定されていて待機状態で前記開閉蓋を閉状態又は開状態にロックするロックレバーと、前記ケーシングに設けられて前記ロックレバーの回転範囲を規制するレバーストッパー部とにより構成されていることを特徴とする。

〔作用〕

このような室内配線用光ケーブル接続箱は、箱本体を床等の内部に埋込み、露出させるのは基板側だけとするので、美観を向上させることができる。また、ロック機構は回転軸を回転させることによりロックレバーを回転させてロック状態にするか、ロックを外すかの制御をするので、必要なときだけ制御することができ、誤動作を防止することができる。

〔実施例〕

以下、本発明の実施例を図面を参照して詳細に説明する。第１図乃至第１２図に示すように、本実施例の光ケーブル接続箱は、床１に埋込まれている金属製の箱本体２を有する。箱本体２の底部には、光ケーブル引込穴３が開けられている。床１内にはフロアダクト４が埋設され、フロアダクト４のダクト穴４Ａと箱本体２の光ケーブル引込穴３とは、合致するように箱本体２の位置決めがなされている。フロアダクト４内に引込まれている光ケーブル５は、光ケーブル引込穴３から箱本体２内に所要の余長をもたせて引込まれている。箱本体２内の光ケーブル５の先端には光コネクタ６が取付けられている。箱本体２の上面開口部には基板７が載置され、ネジ８で箱本体２に固定されている。基板７の中央には、開口部９が設けられている。開口部９は開閉蓋１０で開閉されるようになっている。開閉蓋１０は基板７の裏側でヒンジ１１により開閉自在に片持ち支持されている。また、開閉蓋１０はスプリング１２より開方向に付勢されている。

開閉蓋１０の裏面には、ブラケット１３が固設され、該ブラケット１３はアダプタホルダ１４がネジ１５で交換可能に支持されている。アダプタホルダ１４には、アダプタ１６が開閉蓋１０に対して平行する向きで貫通支持されている。アダプタ１６には、光ケーブル５の先端の光コネクタ６の先端が差込み支持されている。ブラケット１３の下部には、開き阻止用ロック片１７が開閉蓋１０側に折り返して突設されている。

アダプタ１６の先端に対向する側で、基板７の裏面には、開閉蓋１０が開又は閉状態にあるときその各状態で該開閉蓋１０をロックするロック機構１８が設けられている。ロック機構１８は基板７の段付セット穴１９に回転自在に且つ上方に脱出しないようにして上部が嵌め込まれた回転軸２０を有する。該回転軸２０の頂部には、ドライバー溝２０Ａが設けられている。該回転軸２０の頂部外周には、段付セット穴１９に適合する段部２０Ｂが設けられている。また、回転軸２０には、下向きに開口して同心状にスプリング収容凹部２

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ＯＣが設けられ、且つ該スプリング収容凹部２０Ｃより径方向に見て内側の大径部２０Ｄの先には段部２０Ｅを介して小径部２０Ｆが設けられ、スプリング収容凹部２０Ｃより径方向に見て外側の円筒部２０Ｇにはスプリング係止溝２０Ｈが下端から段部２０Ｂ側に向けて形成されている。大径部２０Ｄの外周にはスプリング２１が嵌合され、その一端はスプリング係止溝２０Ｈに挿入されて回り止めされている。回転軸２０の下部外周には段部２０Ｅをストッパーとしてケーシング２２が嵌合され、該ケーシング２２の下部の穴２２Ａから小径部２０Ｆが外部に導出されている。ケーシング２２の上部にはフランジ２２Ｂが設けられ、該フランジ２２Ｂを貫通するネジ２３によりケーシング２２は基板７の裏面に固定されている。ケーシング２２の底面には、下向き突出されてレバーストッパー部２２Ｃが直角な向きでＬ字状に突設されている。ケーシング２２には、スプリング２１の他端を係止するスプリング係止溝２２Ｄが設けられている。ケーシング２２の底部から突出された回転軸２０の小径部２０Ｆの外周にはロックレバー２４の基部が嵌合され、ピン２５で回り止め固定されている。該ロックレバー２４はレバーストッパー部２２Ｃで許容された９０°の範囲内で回転できるようになっている。ケーシング２２の底部には、ロックレバー２４を下降しないように支える支え板２６がネジ２７で固定されている。

室内の機器につながる光ケーブル２８の先端の光コネクタ２９は、第１図に示すように開閉蓋１０が開いているとき、アダプタ１６に挿入されて光コネクタ６に接続されるようになっている。

このような室内配線用光ケーブル接続箱は、光コネクタ２９を接続してないときには、第２図及び第３図に示す状態で待機している。この状態では、箱本体２側の光コネクタ６は該箱本体２内に収納されているので、光コネクタ６の接続面が汚れたり、損傷されたりするのを防止できる。また、この状態では、この室内配線用光ケーブル接続箱は、箱本体２側が床等に埋込まれているので、露出タイプのものに比べて室内の美観を向上させることができる。開閉蓋１０が閉じた状態では、第２図に示すように開き防止用ロック片１７がロックレバー２４の下面に当り、該ロックレバー２４をストッパーとして開閉蓋１０の開きがスプリング１２の付勢に拘らず阻止されている。

かかる状態で、ロック機構１８の回転軸２０をドライバー溝２０Ａを利用して時計方向に回すと、ロックレバー２４が一緒に回り、開き防止用ロック片１７から離れ、開閉蓋１０のロックが外れる。このとき、回転軸２０の回転によりスプリング２１が蓄勢される。開閉蓋１０のロックが外れると、スプリング１２の付勢により、該開閉蓋１０が第２図で時計方向にヒンジ１１を中心として回転し、第１図に示すような開き状態になる。回転軸２０を時計方向に回していた外力を除去すると、スプリング２１の付勢により回転軸２０及びロックレバー２４は反時計方向に回転して元に待機姿勢に戻る。この状態では、第１図に示すように、開閉蓋１０のブラケット１３の下面がロックレバー２４で支えられていて、開閉蓋１０が外力が加わっても閉じない状態にロックされている。従って、この状態では光コネクタ２９をアダプタ１６を介して光コネクタ６に接続できる。またこの状態では、前述したように開閉蓋１０が閉じないようにロックされているので、開閉蓋１０の閉動作で光コネクタ２９や光ケーブル２８が損傷されるのを回避できる。

［発明の効果］

以上説明したように本発明に係る室内配線用光ケーブル接続箱においては、箱本体を床等の内部に埋込み、露出させるのは基板側だけとするので、美観を向上させることができる。また、開閉蓋のロック機構はその回転軸をまわさないかぎり操作できないので、開閉蓋の誤動作を防止することができる。

４．図面の簡単な説明

第１図及び第２図は本発明に係る光ケーブル接続箱の一実施例における使用状態で開閉蓋を開いた状態と閉じた各状態の縦断面図、第３図は第２

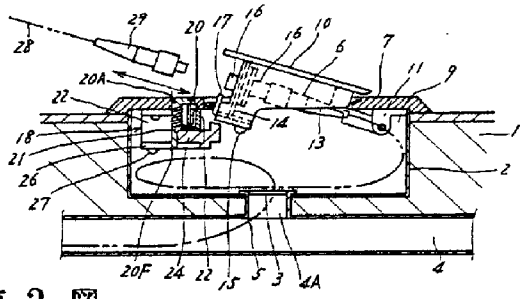
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図の状態における光ケーブル接続箱の平面図、第４図及び第５図は基板側の組付け状態を示す一部破断側面図及び底面図、第６図は基板側の分解状態の一部縦断側面図、第７図はロック機構の支え板を外した状態における平面図、第８図及び第９図は回転軸の縦断面図及び底面図、第１０図乃至第１２図はハウジングの平面図，縦断面図及び底面図である。

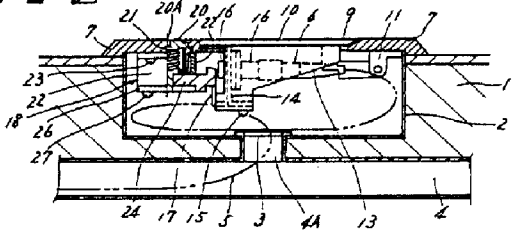
１…床、２…箱本体、３…ケーブル引込穴、４…フロアダクト、４Ａ…ダクト穴、５…光ケーブル、６…光コネクタ、７…基板、８…ネジ、９…開口部、１０…開閉蓋、１１…ヒンジ、１２…スプリング、１３…ブラケット、１４…アダプタホルダ、１５…ネジ、１６…アダプタ、１７…開き阻止用ロック片、１８…ロック機構、２０…回転軸、２０Ａ…ドライバー溝、２１…スプリング、２２…ケーシング、２４…ロックレバー、２８…光ケーブル、２９…光コネクタ。

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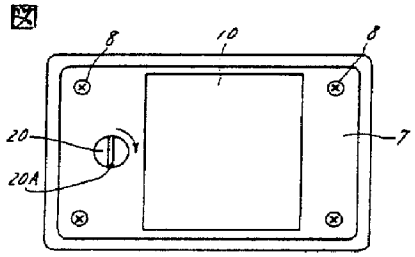
第１図



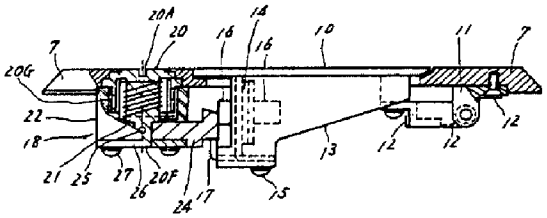
第２図



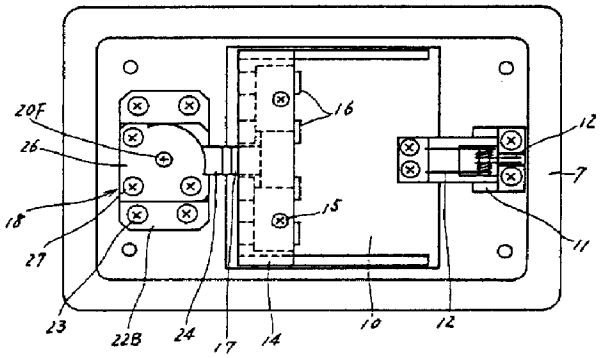
第３図



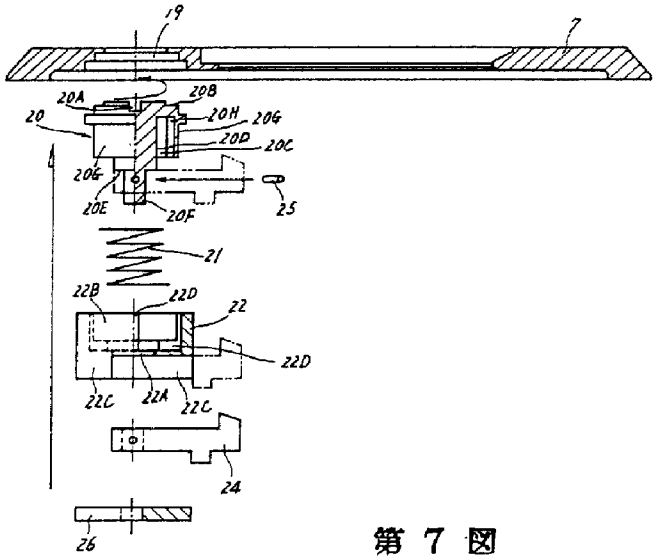
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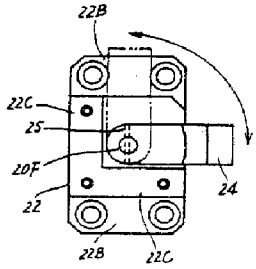
第５図



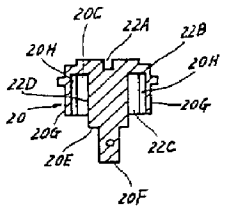
第６図



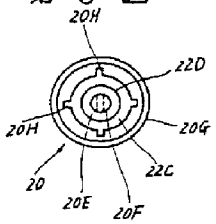
第７図



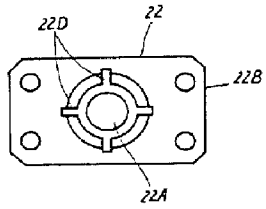
第 8 図



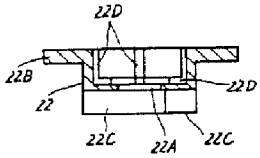
第 9 図



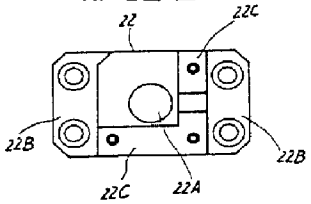
第 10 図



第 11 図



第 12 図



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PAT-NO: JP411087006A
DOCUMENT-IDENTIFIER: JP 11087006 A
TITLE: ROTARY CONNECTOR
PUBN-DATE: March 30, 1999

INVENTOR-INFORMATION:

NAME	COUNTRY
MUKAI, YASUHIKO	
UENO, SEIICHI	

ASSIGNEE-INFORMATION:

NAME	COUNTRY
FURUKAWA ELECTRIC CO LTD:THE	N/A

APPL-NO: JP09242870
APPL-DATE: September 8, 1997

INT-CL (IPC): H01R035/04 , B60R016/02 , B62D001/04

ABSTRACT:

PROBLEM TO BE SOLVED: To reduce the number of part items for silencing such as a sound-proof sheet and a vibration control plate as far as possible by forming a rotary case so that an upper flange and a lower flange extend radially outward direction are integrally formed with an upper and a lower parts of an inner cylinder.

SOLUTION: In a rotary connector 1, a locking projection 2d of a rotary case 2 is locked with a corresponding lock hole 4c of a sleeve 4, and the rotary case 2 and a fixed case 3 are assembled freely to be rotated in relation to each other without separating from each other, and the rotary case 2 is relatively rotated to the fixed case 3 by times corresponding to the length of a flat cable 5. In the rotary connector 1 thereby assembled, an upper flange 2b and a lower flange 2c are integrally formed with an upper and a lower parts of an inner cylinder 2a in the bobbin winding condition. In the rotary connector 1, with looseness and fastening of the winding, a side edge of the flat cable 5 slides on the lower flange 2c of the rotary case 2 so as to generate the sliding noise, but ratio of transmission of this sliding noise to the fixed case 3 is reduced.

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Ｂ６２Ｄ　1/04		Ｂ６２Ｄ　1/04	

審査請求　未請求　請求項の数５　ＯＬ　（全　７　頁）

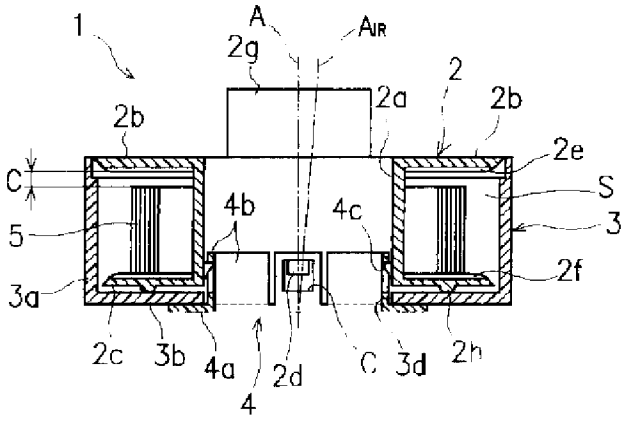
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(54)【発明の名称】　回転コネクタ

(57)【要約】
【課題】　防音シートや制振板等の消音対策部品を可能な限り削減してコストダウンが可能な回転コネクタを提供する。
【解決手段】　相対回転自在に組み付けられ、内部に環状の空間Ｓが形成される固定ケース３と回転ケース２の空間内に、可撓性を有する帯状伝送線５が渦巻状に巻回して収容される回転コネクタ１。回転ケース２は、内筒２ａの上下に半径方向外側に延出する上フランジ２ｂと下フランジ２ｃとが一体に形成されている。



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【特許請求の範囲】
【請求項１】　相対回転自在に組み付けられ、内部に環状の空間が形成される固定ケースと回転ケースの前記空間内に、可撓性を有する帯状伝送線が渦巻状に巻回して収容される回転コネクタにおいて、
前記回転ケースは、内筒の上下に半径方向外側に延出する上フランジと下フランジとが一体に形成されたことを特徴とする回転コネクタ。
【請求項２】　前記回転ケースは、前記下フランジの前記固定ケースと対向する下面に周方向に第１の突部が形成されている、請求項１の回転コネクタ。
【請求項３】　前記回転ケースは、前記上フランジの下面に半径方向に第２の突部が形成されている、請求項１の回転コネクタ。
【請求項４】　前記回転ケースは、前記下フランジの上面に半径方向に第３の突部が形成されている、請求項１の回転コネクタ。
【請求項５】　前記回転ケースは、前記上フランジと下フランジの少なくとも一方の外周縁の厚さが、前記帯状伝送線と対向する側から外面側に向かって薄くなるように形成されている、請求項１の回転コネクタ。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、回転コネクタに関する。
【０００２】
【従来の技術】相対回転する２つの部材間を接続し、電気信号や光信号を伝送する際に使用される回転コネクタは、固定ケースと回転ケースとが互いに相対回転自在に組み付けられ、両ケースの内部に形成される環状の空間内に、フラットケーブルと呼ばれる可撓性を有する帯状伝送線が渦巻状に巻回して収容され、例えば、実開平１－１４７３６３号公報等で公知である。
【０００３】回転コネクタは、例えば、自動車のエアバッグ装置を作動させるために使用され、回転ケースの中央にステアリングシャフトを貫通させ、ステアリングの回転操作に従って回転ケースがステアリングシャフトと共に回転する。一方、固定ケースは、車体側のコンビネーションスイッチに固定される。そして、回転コネクタは、ステアリング操作に従うフラットケーブルの巻き締まりや巻き緩みにより、両ケースの所定回数の相対回転が可能となる。
【０００４】このとき、回転コネクタは、固定ケースに防音シートが、制振板が回転ケースにそれぞれ取り付けられる。防音シートは、固定ケースのフラットケーブルの側縁と接する面に取り付けられる合成樹脂製のシートで、ステアリング操作に伴う巻き締まりや巻き緩みにより、フラットケーブルの側縁と固定ケースとが摺れ合って発生する摺動音や悪路走行時におけるフラットケーブルの鉛直方向の振動に起因するいわゆる踊り音を低減する。

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【０００５】一方、制振板は、回転ケースのフラットケーブルの側縁と対向する面に取り付けられる板で、回転ケース上面とフラットケーブルの側縁との間のクリアランスを小さく抑えることにより、フラットケーブルの鉛直方向の振動に起因する前記踊り音を抑制する。
【０００６】
【発明が解決しようとする課題】ところで、回転コネクタは、上記のように摺動音や踊り音の低減を目的として消音対策部品としての防音シートや制振板が設けられている。このため、回転コネクタは、これらの消音対策部品を設ける分だけ、組み立てに手数がかかるうえ、コスト高になるという問題がある。
【０００７】本発明は上記の点に鑑みてなされたもので、防音シートや制振板等の消音対策部品を可能な限り削減してコストダウンが可能な回転コネクタを提供することを目的とする。
【０００８】
【課題を解決するための手段】本発明においては上記目的を達成するため、相対回転自在に組み付けられ、内部に環状の空間が形成される固定ケースと回転ケースの前記空間内に、可撓性を有する帯状伝送線が渦巻状に巻回して収容される回転コネクタにおいて、前記回転ケースを、内筒の上下に半径方向外側に延出する上フランジと下フランジとが一体に成形された構成としたのである。
【０００９】好ましくは、前記回転ケースは、前記下フランジの前記固定ケースと対向する下面に周方向に第１の突部を形成する。また好ましくは、前記回転ケースは、前記上フランジの下面に半径方向に第２の突部を形成する。更に好ましくは、前記回転ケースは、前記下フランジの上面に半径方向に第３の突部を形成する。
【００１０】好ましくは、前記回転ケースは、前記上フランジと下フランジの少なくとも一方の外周縁の厚さを、前記帯状伝送線と対向する側から外面側に向かって薄くなるように形成する。
【００１１】
【作用】回転コネクタは、回転ケースが内筒の上下に半径方向外側に延出する上フランジと下フランジとを一体に成形した糸巻き状に成形されているので、帯状伝送線は回転ケースの上下のフランジ間に配置されて摺動音や踊り音が低減される。
【００１２】
【発明の実施の形態】以下、本発明の一実施形態を図１乃至図１２に基づいて詳細に説明する。先ず、本発明の回転コネクタの第１の実施形態を図１乃至図６に基づいて説明する。回転コネクタ１は、図１及び図２に示すように、回転ケース２，固定ケース３，スリーブ４及びフラットケーブル５を有している。
【００１３】回転ケース２は、図２及び図３に示すように、糸巻き状に成形され、固定ケース３の内側に配置さ

れる。回転ケース２は、内筒２ａの上下に半径方向外方へ延出する上フランジ２ｂと下フランジ２ｃとが一体に成形されている。内筒２ａは、図３に示すように、内周下部に係止突起２ｄが周方向に複数形成されている。上フランジ２ｂ及び下フランジ２ｃは、互いに対向する内面に半径方向に放射状に延びる突部２ｅ，２ｆが形成され、外周縁の厚さが、収容されるフラットケーブル５と対向する側から外面側に向かって薄くなるように円弧状に形成されている。このとき、突部２ｅ，２ｆは、フラットケーブル５の図２における上下方向の振動を抑制し、突部２ｅとフラットケーブル５の側縁との間のクリアランスＣを考慮し、予め高さが所定値となるように設定されている。また、上フランジ２ｂは、図１及び図２に示したように、上面に外部電線を接続する接続ポスト２ｇが上方へ突出させて形成されている。一方、下フランジ２ｃは、固定ケース３の後述する下フランジ３ｂと対向する下面に突起２ｈが周方向に形成されている。ここで、上フランジ２ｂ及び下フランジ２ｃの外周縁は、収容されるフラットケーブル５と対向する側から外面側に向かって薄くなるように形成されていれば、円弧状に形成されていることに限定されるものではなく、例えば、外方に向かってテーパ状に成形されていてもよい。

【００１４】固定ケース３は、回転ケース２と相対回転自在に組み付けられ、内部にフラットケーブル５を収容する環状の空間Ｓ（図２参照）を形成する。固定ケース３は、図２に示すように、外筒３ａの下部に半径方向内方へ延出するドフランジ３ｂが一体に形成され、側面には下方が開放した係止部３ｃが半径方向外方に向けて張り出すように形成されている。係止部３ｃは、フラットケーブル５の後述する外端が係止される。下フランジ３ｂは、中央に開口３ｄが形成されている。ここで、符号３ｅは、固定ケース３を車体側に固定する固定ベースである。

【００１５】スリーブ４は、固定ケース３の下側から取り付けて回転ケース２に係止される部材で、図２及び図５に示すように、中央に開口が形成された円板４ａの内周縁から上方へ立ち上がる複数の内筒片４ｂを有している。複数の内筒片４ｂは、回転ケース２の係止突起２ｄと対応する位置に係止孔４ｃが設けられている。フラットケーブル５は、平行に配置された平角状の複数の電気導体をポリエステル等の絶縁体で被覆した可撓性を有する伝送線で、両ケース２，３によって形成される環状の空間Ｓに渦巻き状に巻回して収容される。フラットケーブル５は、渦巻き状に巻回した内端と外端において前記電気導体が接続端子５ａ（図１参照）と接続され、これらの接続端子を突出させて樹脂でモールドされている。ここで、フラットケーブル５は、電気導体の他に光ファイバあるいはこれらを組み合わせたものであってもよいことは言うまでもない。

【００１６】回転コネクタ１は、以上のように構成され、以下のようにして組み立てられる。先ず、渦巻き状に巻回したフラットケーブル５の内端を接続ポスト２ｇの位置で回転ケース２に取り付けると共に、外端を固定ケース３の係止部３ｃに係止する。

【００１７】次に、この状態で固定ケース３の内側に回転ケース２を組み付ける。次いで、固定ケース３の下側からスリーブ４を取り付けて回転ケース２に係止させ、回転コネクタ１の組み立てが終了する。これにより、回転コネクタ１は、回転ケース２の係止突起２ｄが、スリーブ４の対応する係止孔４ｃに係合し、回転ケース２と固定ケース３とが外れることなく相対回転自在に組み付けられ、フラットケーブル５の長さに応じた回数だけ回転ケース２が固定ケース３に対して相対回転する。このとき、フラットケーブル５は、回転ケース２が固定ケース３に対して巻き締まり方向と巻き緩み方向の左右方向に等しく回転するように、中間状態に調整して両ケースの回転を規制部材等によって規制する。

【００１８】このようにして組み立てられた回転コネクタ１は、内筒２ａの上下に上フランジ２ｂと下フランジ２ｃとが一体に形成されて糸巻き状に成形されている。従って、回転コネクタ１は、ステアリング装置に取り付けて使用したとき、巻き緩んだり巻き締まったりするのに伴って、フラットケーブル５の側縁が回転ケース２の下フランジ２ｃ上を摺動して摺動音が発生するが、この摺動音が固定ケース３側に伝わる割合が減少するので、従来の回転コネクタのように防音シートを固定ケースに取り付ける必要がない。

【００１９】また、回転ケース２は、上フランジ２ｂ及び下フランジ２ｃのそれぞれに放射状に延び、フランジ内面よりも僅かに高い突部２ｅ，２ｆが形成されている。このため、回転ケース２は、仮に従来の回転ケースのように成形に伴うパーティングラインがフランジ面に発生しても、フラットケーブル５の側縁は下フランジ２ｃの複数の突部２ｆ上を摺動してパーティングラインと触れ合うことがない。従って、フラットケーブル５は、回転ケース２によって円滑な巻き締まりと巻き緩みの作動が実現され、下フランジ２ｃの上面全体とフラットケーブル５の側縁全体とが接することがないので、摺動音も低減される。

【００２０】更に、回転ケース２は、上フランジ２ｂ及び下フランジ２ｃの外周縁が、フラットケーブル５と対向する側から外面側に向かって薄くなるように形成されている。従って、回転コネクタ１は、回転ケース２が回転してフラットケーブル５が巻き緩んでも、外周縁側で上フランジ２ｂや下フランジ２ｃがフラットケーブル５の側縁と接することがなく、これらの干渉に起因した摺動音の発生を防止することができる。

【００２１】特に、回転コネクタ１は、図２に示すように、ステアリングシャフトを通じて回転軸がＡからＡＩＲに変化するような外力が作用しても、回転ケース２の下

フランジ２ｃの外周縁が固定ケース３の下フランジ３ｂ上面に当接して外力に対して抵抗力を生み出す。このため、回転コネクタ１は、回転ケース２に回転軸が傾斜するような外力が作用しても、フラットケーブル５の前記摺動音が増大することはない。

【００２２】しかも、回転ケース２は、上フランジ２ｂと下フランジ２ｃに突部２ｅ，２ｆが一体に形成されている。このため、回転コネクタ１においては、図２に示すフラットケーブル５と上フランジ２ｂとの間のクリアランスＣを高精度に安定させることができ、フラットケーブル５の上下方向の振動を抑えて、この振動に起因する跳り音を小さくすることができ、制振板を設ける必要がない。

【００２３】一方、回転コネクタ１は、回転ケース２の下フランジ２ｃに突起２ｈが周方向に形成されている。このため、回転コネクタ１は、回転ケース２と固定ケース３とが突起２ｈによって線接触した状態で相対回転するので、回転トルクを小さくすることができるうえ、回転ケース２と固定ケース３との相対回転に伴う摺動音も小さくすることができる。

【００２４】ここで、固定ケース３は、図６に示すように、外筒３ａの上部に半径方向内方へ延出するひさし部３ｆを設けても良い。この場合、ひさし部３ｆは、外筒３ａの上部に一体に形成してもよく、あるいは固定ケース３を成形後、ひさし部３ｆを熱溶着によって取り付けてもよい。次に、本発明の回転コネクタの第２の実施形態を図７乃至図１１に基づいて説明する。

【００２５】回転コネクタ１０は、回転ケース１１，固定ケース１２及びフラットケーブル１３を有している。回転ケース１１は、図８及び図９に示すように、糸巻き状に成形され、固定ケース１２の内側に配置される。回転ケース１１は、内筒１１ａの上下に半径方向外方へ延出する上フランジ１１ｂと下フランジ１１ｃとが一体に成形されている。内筒１１ａは、図８に示すように、下部内周に係止部１１ｄが形成されている。係止部１１ｄには、係止孔１１ｅと係止突起１１ｆが形成されている。上フランジ１１ｂ及び下フランジ１１ｃは、互いに対向する内面に半径方向に放射状に延びる突部１１ｇ，１１ｈが形成され、外周縁の厚さが、収容されるフラットケーブル１３と対向する側から外面側に向かって薄くなるように円弧状に形成されている。このとき、突部１１ｇ，１１ｈは、フラットケーブル１３の図８における上下方向の振動を抑制し、突部１１ｇとフラットケーブル１３の側縁との間のクリアランスＣを考慮し、予め高さが所定値となるように設定されている。また、上フランジ１１ｂは、図７及び図８に示したように、上面に外部電線を接続する接続ポスト１１ｊが上方へ突出させて形成されている。一方、下フランジ１１ｃは、固定ケース１２の後述する下フランジ１２ｂと対向する下面に突起１１ｋが周方向に形成されている。ここで、上フランジ１１ｂ及び下フランジ１１ｃの外周縁は、収容されるフラットケーブル１３と対向する側から外面側に向かって薄くなるように形成されていれば、円弧状に形成されていることに限定されるものではなく、例えば、外方に向かってテーパ状に成形されていてもよい。

【００２６】固定ケース１２は、回転ケース１１と相対回転自在に組み付けられ、内部にフラットケーブル１３を収容する環状の空間Ｓ（図８参照）を形成する。固定ケース１２は、図８に示すように、外筒１２ａの下部に半径方向内方へ延出する下フランジ１２ｂが一体に形成され、側面には下方が開放した係止部１２ｃが半径方向外方に向けて張り出すように形成されている。係止部１２ｃは、フラットケーブル１３の後述する外端が係止される。下フランジ１２ｂは、中央に開口１２ｄが形成されている。固定ケース１２は、固定ベース１２ｅによって車体側に固定される。また、下フランジ１２ｂには、内縁から上方に立ち上がる複数の挿通片１２ｆが設けられている。

【００２７】フラットケーブル１３は、第１の実施形態のフラットケーブル５と同様に構成された可撓性を有する伝送線で、両ケース１１，１２によって形成される環状の空間Ｓに渦巻き状に巻回して収容される。フラットケーブル１３は、渦巻き状に巻回した内端と外端において前記電気導体が接続端子１３ａ（図７参照）と接続され、これらの接続端子を突出させて樹脂でモールドされている。ここで、フラットケーブル１３は、電気導体の他に光ファイバあるいはこれらを組み合わせたものであってもよいことは言うまでもない。

【００２８】回転コネクタ１０は、以上のように構成され、以下のようにして組み立てられる。先ず、渦巻き状に巻回したフラットケーブル１３の内端を接続ポスト１１ｊの位置で回転ケース１１に取り付けると共に、外端を固定ケース１２の係止部１２ｃに係止する。

【００２９】次に、この状態で各挿通片１２ｆを対応する係止孔１１ｅに挿通させ、固定ケース１２の内側に回転ケース１１を組み付けて、回転コネクタ１０の組み立てが終了する。このとき、回転コネクタ１０は、両ケース１１，１２を組み付けると、回転ケース１１の係止突起１１ｆが、図８に示すように、固定ケース１２の開口１２ｄの周縁に係止され、回転ケース１１と固定ケース１２とが相対回転自在に組み付けられ、フラットケーブル１３の長さに応じた回数だけ回転ケース１１が固定ケース１２に対して相対回転する。

【００３０】また、フラットケーブル１３は、回転ケース１１が固定ケース１２に対して巻き締まり方向と巻き緩み方向の左右方向に等しく回転するように、中間状態に調整して両ケースの回転を規制部材等によって規制しておく。このようにして組み立てられた回転コネクタ１０は、第１の実施形態と同様の効果を発揮することができる。

【００３１】特に、本実施形態の回転コネクタ１０は、ステアリング装置に取り付けて使用したとき、フラットケーブル１３の巻き緩みや巻き締まりに伴って、フラットケーブル１３の側縁が回転ケース１１の下フランジ１１ｃ上を摺動して摺動音が発生するが、この摺動音が固定ケース１２側に伝わる割合が減少するので、従来の回転コネクタのように防音シートを固定ケースに取り付ける必要がない。

【００３２】また、回転ケース１１は、上フランジ１１ｂと下フランジ１１ｃに突部１１ｇ、１１ｈが一体に形成されている。このため、回転ケース１０は、図８に示すフラットケーブル１３と上フランジ１１ｂとの間のクリアランスＣを高精度に安定させることができ、フラットケーブル１３の上下方向の振動を抑えて、この振動に起因する鳴り音を小さくすることができ、制振板を設ける必要がない。

【００３３】ここで、固定ケース１２は、図１１に示すように、外筒１２ａの上部に半径方向内方へ延出するひさし部１２ｇを設けても良い。この場合、ひさし部１２ｇは、外筒１２ａの上部に一体に形成してもよく、あるいは固定ケース１２を成形後、ひさし部１２ｇを熱溶着によって取り付けてもよい。また、本発明の回転コネクタは、図１２に示す回転コネクタ２０のように、構成してもよいことはいうまでもない。

【００３４】即ち、回転コネクタ２０は、回転ケース２１，固定ケース２２及びフラットケーブル２３を有し、回転ケース２１と固定ケース２２とが相対回転自在に組み付けられる。このとき、回転ケース２１は、内筒２１ａの上下に上フランジ２１ｂと下フランジ２１ｃとが形成された糸巻き状に成形する。一方、固定ケース２２は、図１２に示すように円筒状に成形し、上下の内縁に回転ケース２１の上フランジ２１ｂと下フランジ２１ｃの外周縁が係合する段部２２ａ，２２ｂを形成する。

【００３５】回転コネクタ２０は、以上のように構成すると、回転ケース２１が糸巻き状に成形されているので、上下のフランジ２１ｂ，２１ｃ間が一定に保持されると共に、回転軸が傾斜する方向の外力が作用しても、フランジ２１ｂ，２１ｃの外周縁が固定ケース２２の段部２２ａ，２２ｂに当接して外力に対して抵抗力を生み出し、フラットケーブル２３の側縁が上フランジ２１ｂや下フランジ２１ｃに接することが抑制され、防音シートを設ける必要がない。また、回転コネクタ２０は、上下のフランジ２１ｂ，２１ｃ間が一定に保持されることから、フラットケーブル２３の側縁と上フランジ２１ｂとの間のクリアランスが予め設定された値に保持されるので、制振板を設ける必要もない。

【００３６】

【発明の効果】請求項１の発明によれば、回転ケースが内筒の上下に半径方向外側に延出する上フランジと下フランジとを一体に成形した糸巻き状に成形されているので、帯状伝送線は回転ケースの上下のフランジ間に配置されて摺動音や鳴り音が低減され、防音シートや制振板等の消音対策部品を削減してコストダウンが可能な回転コネクタを提供することができる。

【００３７】請求項２の発明によれば、第１の突部によって回転ケースと固定ケースとが線接触した状態で相対回転するので、回転コネクタの回転トルクを小さくすることができるうえ、回転ケースと固定ケースとの相対回転に伴う摺動音も小さくすることができる。請求項３，４の発明によれば、帯状伝送線が回転ケースのフランジと第２及び第３の突部のみで接触するので、摺動音が低減され、防音シートを設ける必要がない。また、回転コネクタは、第２及び第３の突部により帯状伝送線と回転ケースの上フランジとの間のクリアランスを高精度に安定させることができるので、帯状伝送線の上下方向の振動を一層抑制することができる。

【００３８】請求項５の発明によれば、回転ケースが回転して帯状伝送線が巻き緩んでも、外周縁側で上フランジや下フランジが帯状伝送線の側縁と接することがなく、これらの干渉に起因した摺動音の発生を防止した回転コネクタとすることができる。

【図面の簡単な説明】

【図１】本発明の回転コネクタの第１の実施形態を示す平面図である。

【図２】図１の回転コネクタのII－II線に沿った断面図である。

【図３】図１の回転コネクタを構成する回転ケースの一部を破断した斜視図である。

【図４】図１の回転コネクタを構成する固定ケースの一部を破断した斜視図である。

【図５】図１の回転コネクタを構成するスリーブの一部を破断した斜視図である。

【図６】図１の回転コネクタを構成する固定ケースの変形例を示すもので、固定ケースの一部を破断した斜視図である。

【図７】本発明の回転コネクタの第２の実施形態を示す平面図である。

【図８】図７の回転コネクタのVIII－VIII線に沿った断面図である。

【図９】図７の回転コネクタを構成する回転ケースの一部を破断した斜視図である。

【図１０】図７の回転コネクタを構成する固定ケースの一部を破断した斜視図である。

【図１１】図７の回転コネクタを構成する固定ケースの変形例を示すもので、固定ケースの一部を破断した斜視図である。

【図１２】本発明の回転コネクタの第３の実施形態を示す断面図である。

【符号の説明】

１　　回転コネクタ

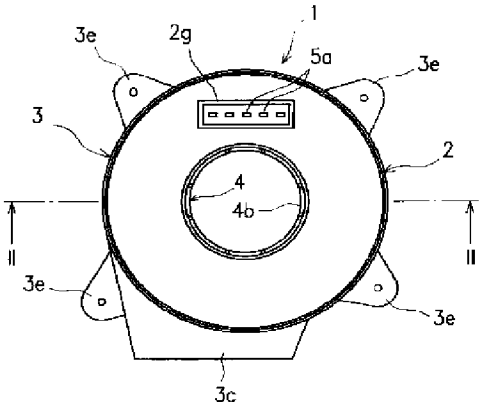
９

２	回転ケース
２ａ	内筒
２ｂ	上フランジ
２ｃ	下フランジ
２ｄ	係止突起
２ｅ	突部（第２の突部）
２ｆ	突部（第３の突部）
２ｈ	突起（第１の突部）
３	固定ケース
３ａ	外筒
３ｂ	下フランジ
４	スリーブ
４ａ	円板
４ｂ	内筒片
４ｃ	係止孔
５	フラットケーブル
５ａ	接続端子
１０	回転コネクタ
１１	回転ケース

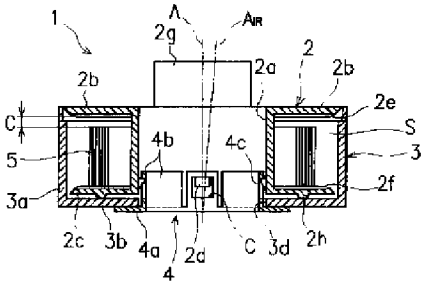
１０

１１ａ	内筒
１１ｂ	上フランジ
１１ｃ	下フランジ
１１ｇ	突部（第２の突部）
１１ｈ	突部（第３の突部）
１１ｋ	突起（第１の突部）
１２	固定ケース
１３	フラットケーブル
２０	回転コネクタ
２１	回転ケース
２１ａ	内筒
２１ｂ	上フランジ
２１ｃ	下フランジ
２２	固定ケース
２２ａ，２２ｂ	段部
２３	フラットケーブル
Ａ，ＡＩＲ	回転軸
Ｓ	環状の空間

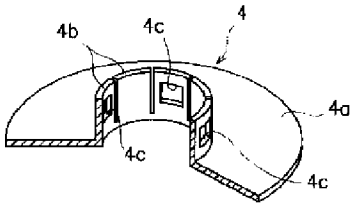
【図１】



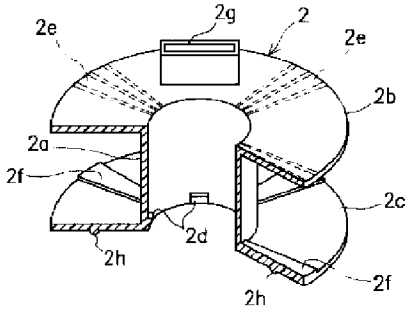
【図２】



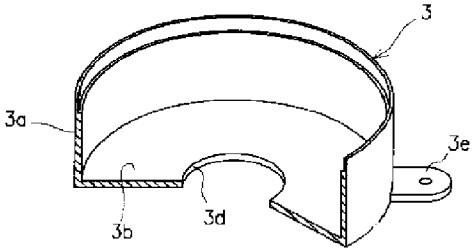
【図５】



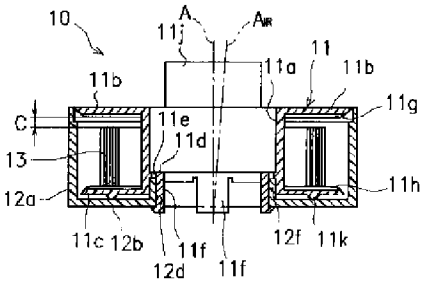
【図３】



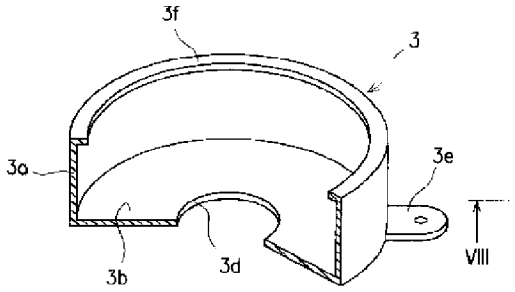
【図４】



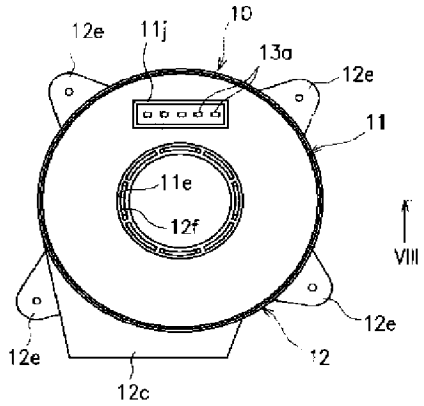
【図８】



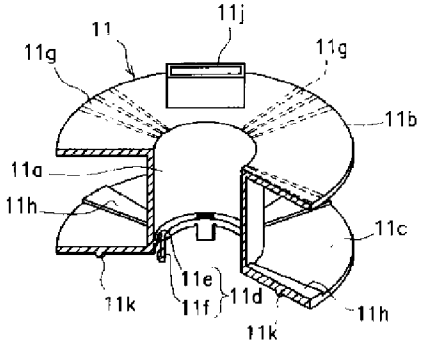
【図６】



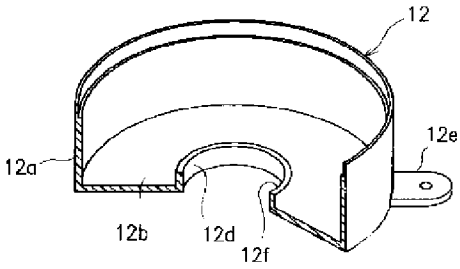
【図７】



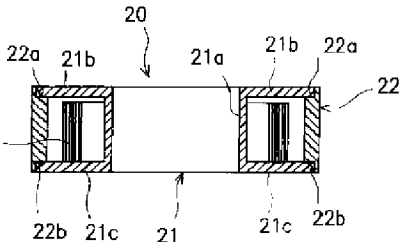
【図９】



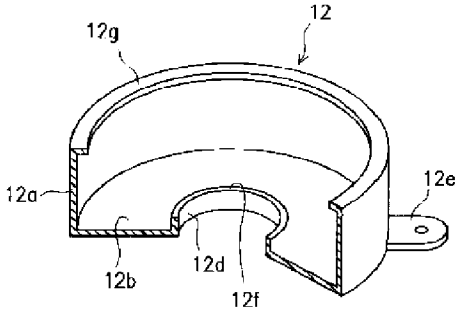
【図１０】



【図１２】



【図１１】



Electronic Acknowledgement Receipt

EFS ID:	33831246
Application Number:	15875564
International Application Number:	
Confirmation Number:	6390
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Customer Number:	142510
Filer:	Julie Katherine Skoge/Kris Wacek
Filer Authorized By:	Julie Katherine Skoge
Attorney Docket Number:	02316.2584US22/ADC003176
Receipt Date:	26-SEP-2018
Filing Date:	19-JAN-2018
Time Stamp:	12:09:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	2018-09-26-IDS-2-02316-2584US22.PDF	99838 ba67771a1d80a132bcf40821713bfb8789355b2c	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	2018-09-26-1449-2-02316-2584 US22.PDF	133875 4c8e40d20633a233ee180d19c77a1da4895eac99	no	4
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5	Non Patent Literature	Defendant-Clearfield-Revised-Preliminary-Invalidity-Claim-Charts-12-11-2017.PDF	804861 b7950e95c12f0bbee76c2ea935fb7fab14684949	no	51
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13	Non Patent Literature	CommScope-Resp-to-2nd-Revised-Invalidity-01-19-2018.PDF	359607 97b61f0538881adafbc07cdfa06b046e8303a86c	no	105
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15	Non Patent Literature	Exhibit-K-to-Second-Revised-Preliminary-Invalidity.PDF	179482 58b23019457760d949d52017e6d92dd187f970c6	no	19
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16	Non Patent Literature	Joint-Status-Report-Dated-02-09-2018.PDF	194613 f479e61332b06684b12f49808ae22d66a14e5a75	no	11
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17	Non Patent Literature	Joint-Status-Report-Exhibit-A.PDF	194494 7c30041392d4b26b6c40a2a5e60ddda666dbbbcb	no	33
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18	Non Patent Literature	Joint-Status-Report-Exhibit-B.PDF	285062 97a07a529b9b3eff7c4ad4538296408d4af6cc78	no	21
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20	Non Patent Literature	Order-of-Dismissal-dated-02-20-2018.PDF	77222 de74e872a46181b1b01715ba2b89ae6152e59b97	no	1
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			Total Files Size (in bytes):	12395400	

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New Applications Under 35 U.S.C. 111

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.

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	KOWALCZYK ET AL.	Examiner:	ULLAH, AKM E
Serial No.:	15/875,564	Group Art Unit:	2874
Filed:	JANUARY 19, 2018	Docket No.:	02316.2584US22/ADC003176
Title:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL		

Filed via EFS-Web

INFORMATION DISCLOSURE STATEMENT (37 C.F.R. § 1.97(b))

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

142510
PATENT TRADEMARK OFFICE

Attention: Commissioner for Patents

With regard to the above-identified application, the items of information listed on the enclosed Form 1449 are brought to the attention of the Examiner.

This statement should be considered because it is submitted before the mailing date of a first Office Action on-the-merits. Accordingly, no fee is due for consideration of the items listed on the enclosed Form 1449.

In accordance with 37 C.F.R. §1.98(a)(2), a copy of each foreign patent and/or a copy of each publication, other than U.S. patents and U.S. patent application publications, listed on the accompanying Form 1449 is enclosed.

No representation is made that a reference is "prior art" within the meaning of 35 U.S.C. §§ 102 and 103 and Applicants reserve the right, pursuant to 37 C.F.R. § 1.131 or otherwise, to establish that the reference(s) are not "prior art."

Consideration of the items listed is respectfully requested. Pursuant to the provisions of M.P.E.P. 609, it is requested that the Examiner return a copy of the attached Form 1449, marked as being considered and initialed by the Examiner, to the undersigned with the next official communication.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: September 26, 2018

/Julie K. Skoge/
Julie K. Skoge
Reg. No. 63,431
JKS:PLSkaw

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/875,564	01/19/2018	Scott C. Kowalczyk	02316.2584US22/ ADC003176

CONFIRMATION NO. 6390

142510
M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

PUBLICATION NOTICE

OC00000099790216

Title:FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL

Publication No.US-2018-0143389-A1
Publication Date:05/24/2018

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.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/875,564	01/19/2018	2883	1720	02316.2584US22/ADC003176	20	2

CONFIRMATION NO. 6390

142510
M&G CommScope
P.O. Box 2903
Minneapolis, MN 55402

FILING RECEIPT

OC000000097350503

Date Mailed: 02/14/2018

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections 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**

Inventor(s)

Scott C. Kowalczyk, Savage, MN;
Jonathan Walter Coan, Savage, MN;
Jonathan R. Kaml, Shakopee, MN;

Applicant(s)

CommScope Technologies LLC, Hickory, NC;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 15/470,311 03/27/2017
which is a CON of 14/979,870 12/28/2015 PAT 9606319
which is a CON of 14/539,459 11/12/2014 PAT 9261666
which is a CON of 14/132,691 12/18/2013 PAT 8891931
which is a CON of 13/924,191 06/21/2013 PAT 8705929
which is a CON of 13/479,015 05/23/2012 PAT 8494333
which is a CON of 13/032,337 02/22/2011 PAT 8189984
which is a CON of 12/793,556 06/03/2010 PAT 7894701
which is a CON of 12/182,705 07/30/2008 PAT 7756379
which claims benefit of 61/029,248 02/15/2008
and claims benefit of 60/954,214 08/06/2007

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: 02/12/2018

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/875,564**

Projected Publication Date: 05/24/2018

Non-Publication Request: No

Early Publication Request: No

Title

FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL

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.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

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.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

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NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/875,564

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	300
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	660
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	760
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 100 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*				x 460 =	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
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1720

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	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))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	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))									
	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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	KOWALCZYK ET AL.	Examiner:	UNKNOWN
Serial No.:	HEREWITH	Group Art Unit:	UNKNOWN
Filed:	NEW FILING	Docket No.:	02316.2584US22
Title:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL		

Filed via EFS-Web

INFORMATION DISCLOSURE STATEMENT (37 C.F.R. § 1.97(b))

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

142510
PATENT TRADEMARK OFFICE

Attention: Commissioner for Patents

With regard to the above-identified application, the items of information listed on the enclosed Form 1449 are brought to the attention of the Examiner.

This statement should be considered because it is submitted within three months of the filing date of the above-identified application, which is not an application under 37 C.F.R. § 1.53(d). Accordingly, no fee is due for consideration of the items listed on the enclosed Form 1449.

In accordance with 37 C.F.R. §1.98(a)(2) and §1.98(d), a copy of each foreign patent and/or a copy of each publication, other than U.S. patents and U.S. patent application publications, has been provided only for those items listed on the enclosed Form 1449 that have not previously been cited by or submitted to the U.S. Patent and Trademark Office in parent applications, U.S. Serial No. 15/470,311 filed on March 27, 2017; U.S. Serial No. 14/979,870 filed on December 28, 2015; U.S. Serial No. 14/539,459 filed on November 12, 2014; U.S. Serial No. 14/132,691 filed on December 18, 2013; U.S. Serial No. 13/924,191 filed on June 21, 2013; U.S. Serial No. 13/479,015 filed on May 23, 2012; U.S. Serial No. 13/032,337 filed on February 22, 2011; U.S. Serial No. 12/793,556 filed on June 3, 2010; and U.S. Serial No. 12/182,705 filed on July 30, 2008.

No representation is made that a reference is "prior art" within the meaning of 35 U.S.C. §§ 102 and 103 and Applicants reserve the right, pursuant to 37 C.F.R. § 1.131 or otherwise, to establish that the reference(s) are not "prior art."

Consideration of the items listed is respectfully requested. Pursuant to the provisions of M.P.E.P. 609, it is requested that the Examiner return a copy of the attached Form 1449, marked as being considered and initialed by the Examiner, to the undersigned with the next official communication.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: January 19, 2018

/David G. Schmaltz/
David G. Schmaltz
Reg. No. 39,828
DGS:PLSkaw

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 02316.2584US22	Application Number: NEW FILING
	Inventor: KOWALCZYK ET AL.	
	Filing Date: HEREWITH	Group Art Unit: UNKNOWN

U.S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	1,276,825	08/27/1918	Swope			
	1,442,999	01/23/1923	Boyle			
	1,446,410	02/20/1923	Bennett et al.			
	1,474,580	11/20/1923	Clark et al.			
	RE 20,995	02/07/1939	Beasley			
	2,502,496	04/04/1950	Wickman			
	2,521,226	09/05/1950	Keller			
	2,727,703	12/20/1955	Bonnett			
	3,131,729	05/05/1964	Leysinger			
	3,657,491	04/18/1972	Ryder et al.			
	3,667,417	06/06/1972	Clinkenbeard			
	3,920,308	11/18/1975	Murray			
	3,940,086	02/24/1976	Stoqulet			
	4,053,118	10/11/1977	Aikins			
	4,081,258	03/28/1978	Goell et al.			
	4,201,278	05/06/1980	Balde			
	4,384,688	05/24/1983	Smith			
	4,587,801	05/13/1986	Missout et al.			
	4,635,875	01/13/1987	Apple			
	4,657,140	04/14/1987	Zagar et al.			
	4,666,237	05/19/1987	Mallinson			
	4,767,073	08/30/1988	Malzacher			
	4,869,437	09/26/1989	Berz et al.			
	4,883,337	11/28/1989	Dahlgren			
	4,913,369	04/03/1990	Lia et al.			
	4,939,798	07/10/1990	Last			

EXAMINER	DATE CONSIDERED
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.	

*Substitute Disclosure Statement Form (PTO-1449) Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 02316.2584US22	Application Number: NEW FILING
	Inventor: KOWALCZYK ET AL.	
	Filing Date: HEREWITH	Group Art Unit: UNKNOWN

	4,940,859	07/10/1990	Peterson			
	4,953,194	08/28/1990	Hansen et al.			
	4,968,929	11/06/1990	Hauck et al.			
	4,978,310	12/18/1990	Shichida			
	5,016,554	05/21/1991	Harris, Jr. et al.			
	5,052,940	10/01/1991	Bengal			
	5,066,149	11/19/1991	Wheeler et al.			
	5,066,256	11/19/1991	Ward, Sr.			
	5,071,211	12/10/1991	Debortoli et al.			
	5,074,863	12/24/1991	Dines			
	5,100,221	03/31/1992	Carney et al.			
	5,107,532	04/21/1992	Hansen et al.			
	5,161,988	11/10/1992	Krupka			
	5,166,970	11/24/1992	Ward			
	5,167,001	11/24/1992	Debortoli et al.			
	5,185,843	02/09/1993	Aberson et al.			
	5,222,164	06/22/1993	Bass, Sr. et al.			
	5,265,187	11/23/1993	Morin et al.			
	5,265,815	11/30/1993	Soyka et al.			
	5,280,861	01/25/1994	Corriveau			
	5,305,405	04/19/1994	Emmons et al.			
	5,317,663	05/31/1994	Beard et al.			
	5,326,040	07/05/1994	Kramer			
	5,335,874	08/09/1994	Shrum et al.			
	5,353,367	10/04/1994	Czosnowski et al.			
	5,393,249	02/28/1995	Morgenstern et al.			
	5,394,503	02/28/1995	Dietz, Jr. et al.			
	5,413,494	05/09/1995	Dewey et al.			
	5,418,334	05/23/1995	Williams			

EXAMINER	DATE CONSIDERED
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.	

*Substitute Disclosure Statement Form (PTO-1449) Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 02316.2584US22	Application Number: NEW FILING
	Inventor: KOWALCZYK ET AL.	
	Filing Date: HEREWITH	Group Art Unit: UNKNOWN

	5,419,717	05/30/1995	Abendschein et al.			
	5,434,944	07/18/1995	Kerry et al.			
	5,448,015	09/05/1995	Jamet et al.			
	5,448,675	09/05/1995	Leone et al.			
	5,467,062	11/14/1995	Burroughs et al.			
	5,473,715	12/05/1995	Schofield et al.			
	5,483,467	01/09/1996	Krupka et al.			
	5,490,229	02/06/1996	Ghandeharizadeh et al.			
	5,494,234	02/27/1996	Kramer			
	5,494,446	02/27/1996	DeLucia et al.			
	5,497,444	03/05/1996	Wheeler			
	5,519,275	05/21/1996	Scott et al.			
	5,522,561	06/04/1996	Koyamatsu et al.			
	5,544,836	08/13/1996	Pera			
	5,551,545	09/03/1996	Gelfman			
	5,613,030	03/18/1997	Hoffer et al.			
	5,638,481	06/10/1997	Arnett			
	5,657,412	08/12/1997	Caudrelier			
	5,685,741	11/11/1997	Dewey et al.			
	5,703,990	12/30/1997	Robertson et al.			
	5,709,347	01/20/1998	Hoffmann et al.			
	5,712,942	01/27/1998	Jennings et al.			
	5,717,810	02/10/1998	Wheeler			
	5,718,397	02/17/1998	Stevens			
	5,734,774	03/31/1998	Morrell			
	5,749,148	05/12/1998	White, III et al.			
	5,787,219	07/28/1998	Mueller et al.			
	5,821,510	10/13/1998	Cohen et al.			
	5,854,824	12/29/1998	Bengal et al.			

EXAMINER	DATE CONSIDERED
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.	

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 02316.2584US22	Application Number: NEW FILING
	Inventor: KOWALCZYK ET AL.	
	Filing Date: HEREWITH	Group Art Unit: UNKNOWN

	5,915,640	06/29/1999	Wagter et al.			
	5,987,203	11/16/1999	Abel et al.			
	5,987,207	11/16/1999	Hoke			
	5,992,787	11/30/1999	Burke			
	6,002,331	12/14/1999	Laor			
	6,077,108	06/20/2000	Lorscheider et al.			
	6,095,837	08/01/2000	David et al.			
	6,116,961	09/12/2000	Henneberger et al.			
	6,215,938 B1	04/10/2001	Reitmeier et al.			
	6,220,413 B1	04/24/2001	Walters et al.			
	6,222,908 B1	04/24/2001	Bartolutti et al.			
	6,222,975 B1	04/24/2001	Gilbert et al.			
	6,234,830 B1	05/22/2001	Ensz et al.			
	6,238,235 B1	05/29/2001	Shavit et al.			
	6,285,293 B1	09/04/2001	German et al.			
	6,300,877 B1	10/09/2001	Schannach et al.			
	6,315,598 B1	11/13/2001	Elliot et al.			
	6,330,148 B1	12/11/2001	Won et al.			
	6,330,307 B1	12/11/2001	Bloch et al.			
	6,350,148 B1	02/26/2002	Bartolutti et al.			
	6,367,347 B1	04/09/2002	Blaschke et al.			
	6,421,322 B1	07/16/2002	Koziy et al.			
	6,424,710 B1	07/23/2002	Bartolutti et al.			
	6,456,768 B1	09/24/2002	Boncek et al.			
	D466,479 S	12/03/2002	Pein et al.			
	6,494,396 B2	12/17/2002	Sugata			
	6,499,861 B1	12/31/2002	German et al.			
	6,511,231 B2	01/28/2003	Lampert et al.			
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EXAMINER	DATE CONSIDERED

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FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 02316.2584US22	Application Number: NEW FILING
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FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 02316.2584US22	Application Number: NEW FILING
	Inventor: KOWALCZYK ET AL.	
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(54) FIBER OPTIC STORING AND DISPENSING APPARATUS

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(21) Appl. No.: **11/081,190**

(22) Filed: **Mar. 16, 2005**

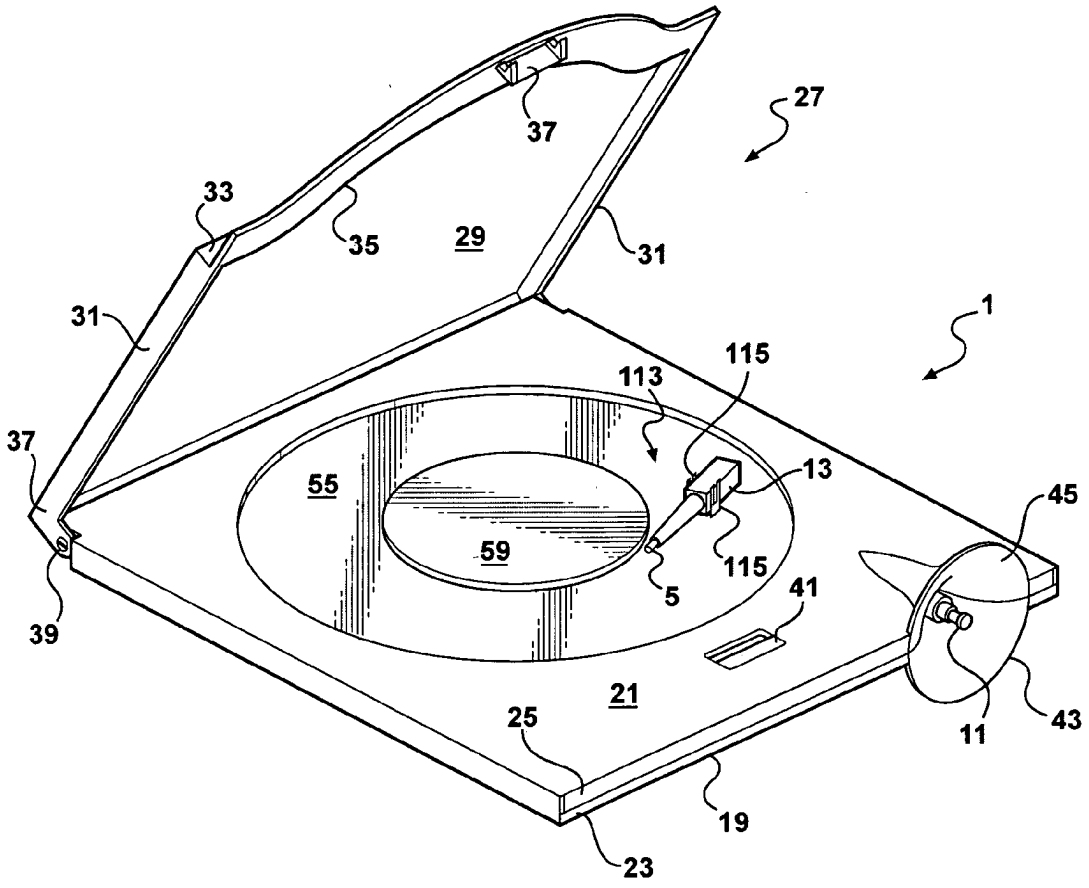
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(57) **ABSTRACT**

Storage and dispensing apparatus for use with a unitary length of coilable fiber optic cable having a minimum bending radius, such apparatus having a casing within which is journaled a rotatable spool having two grooves in which relatively long and relatively short lengths of the cable may be coiled. One end of the cable is coupled to a connector that is releasably retained on the spool for rotation therewith. The opposite end of the cable is joined to a connector which is extendible from and retractable into the casing in which the spool is journaled. The casing is formed of rigid plastic material which protects the cable against damage from externally applied forces. No part of the cable within the casing is subject to being bent about a radius less than the minimum bending radius.



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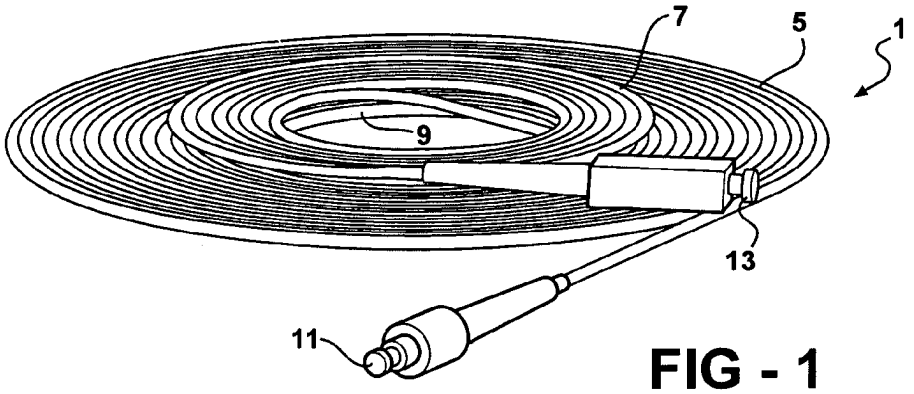


FIG - 1

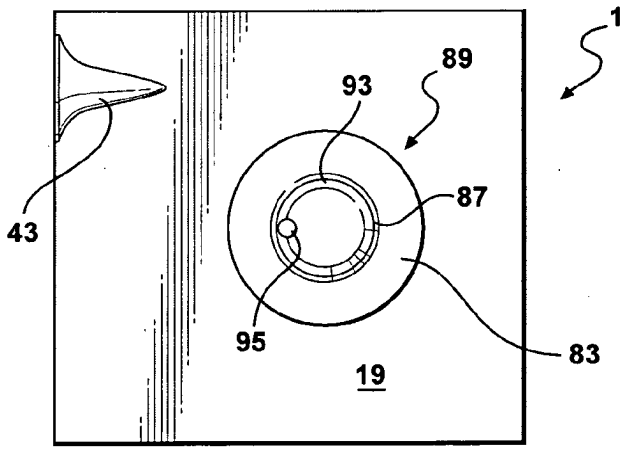


FIG - 2

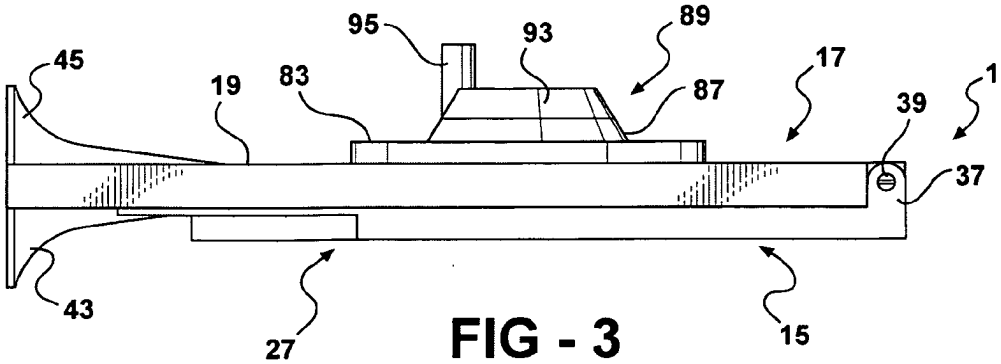


FIG - 3

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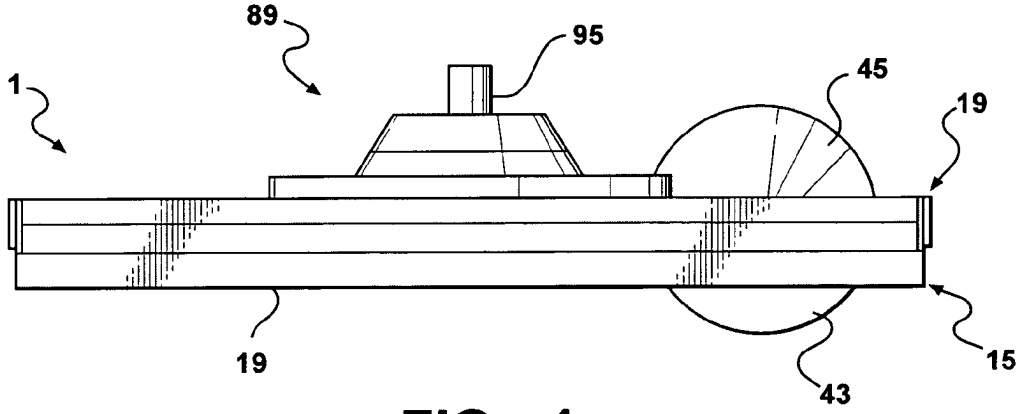


FIG - 4

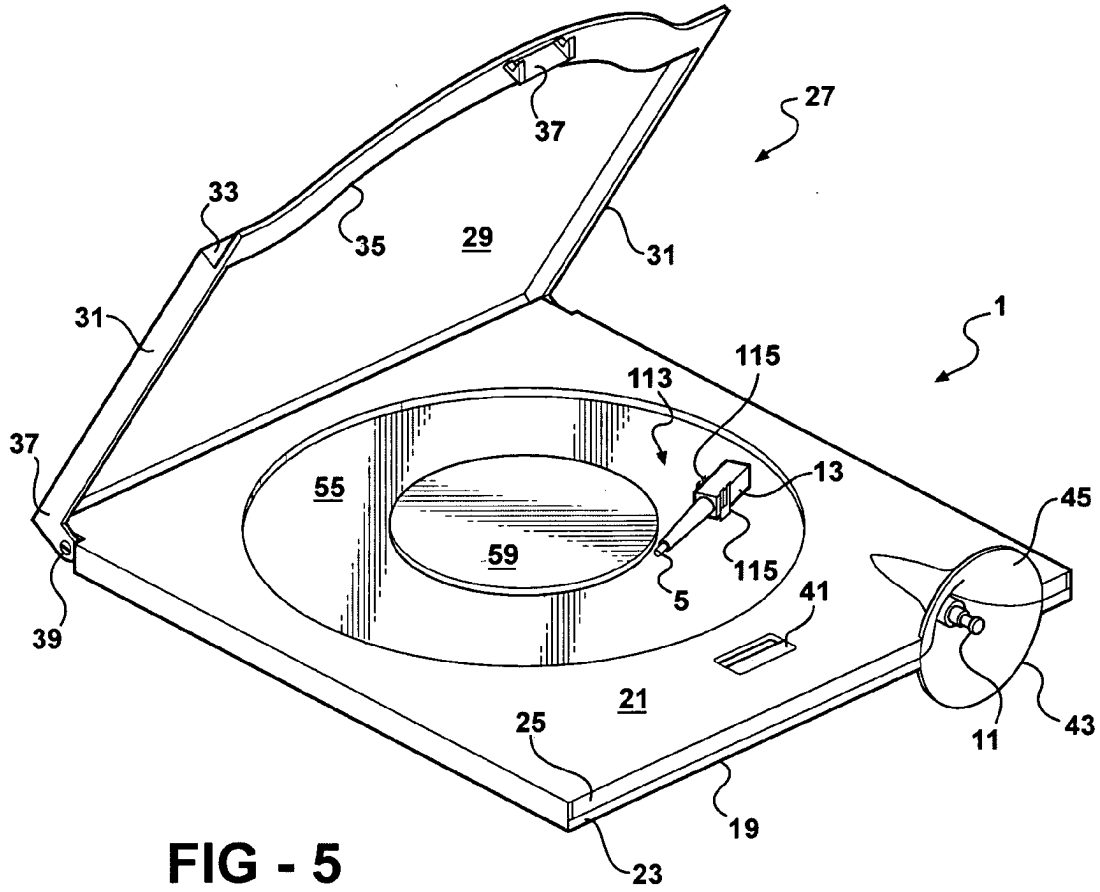


FIG - 5

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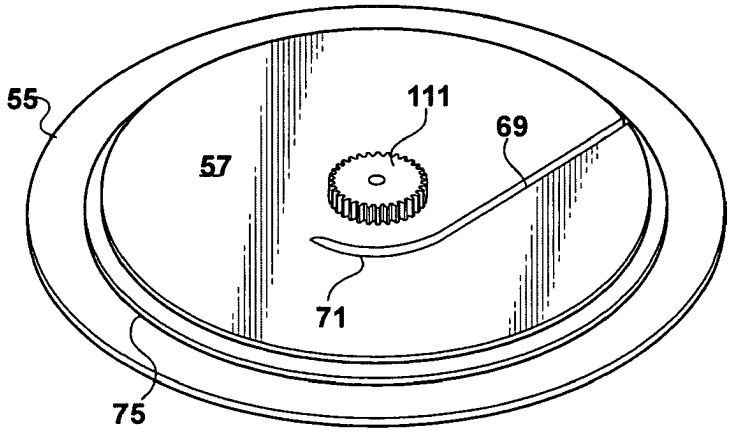


FIG - 6

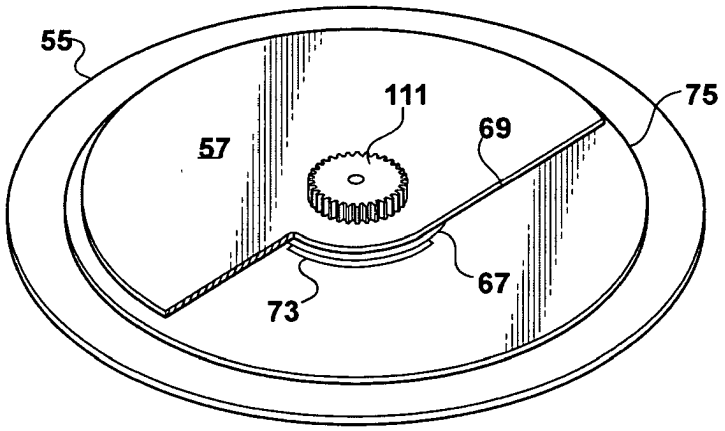


FIG - 7

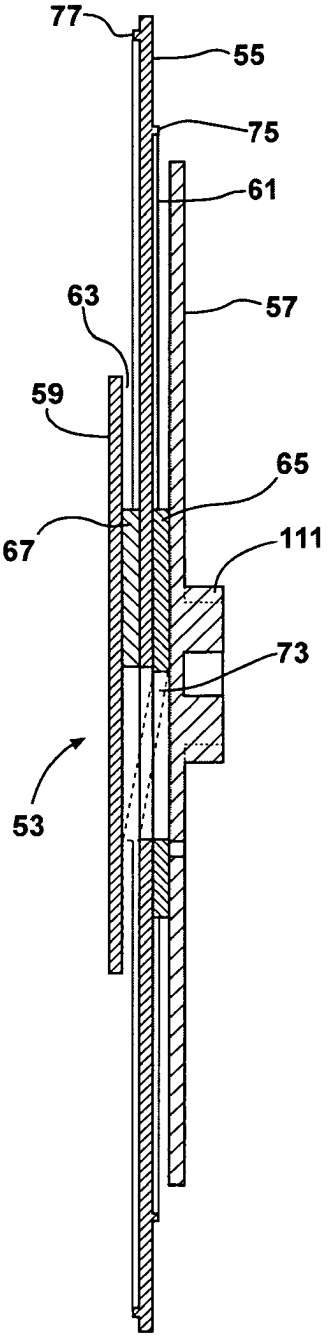


FIG - 10

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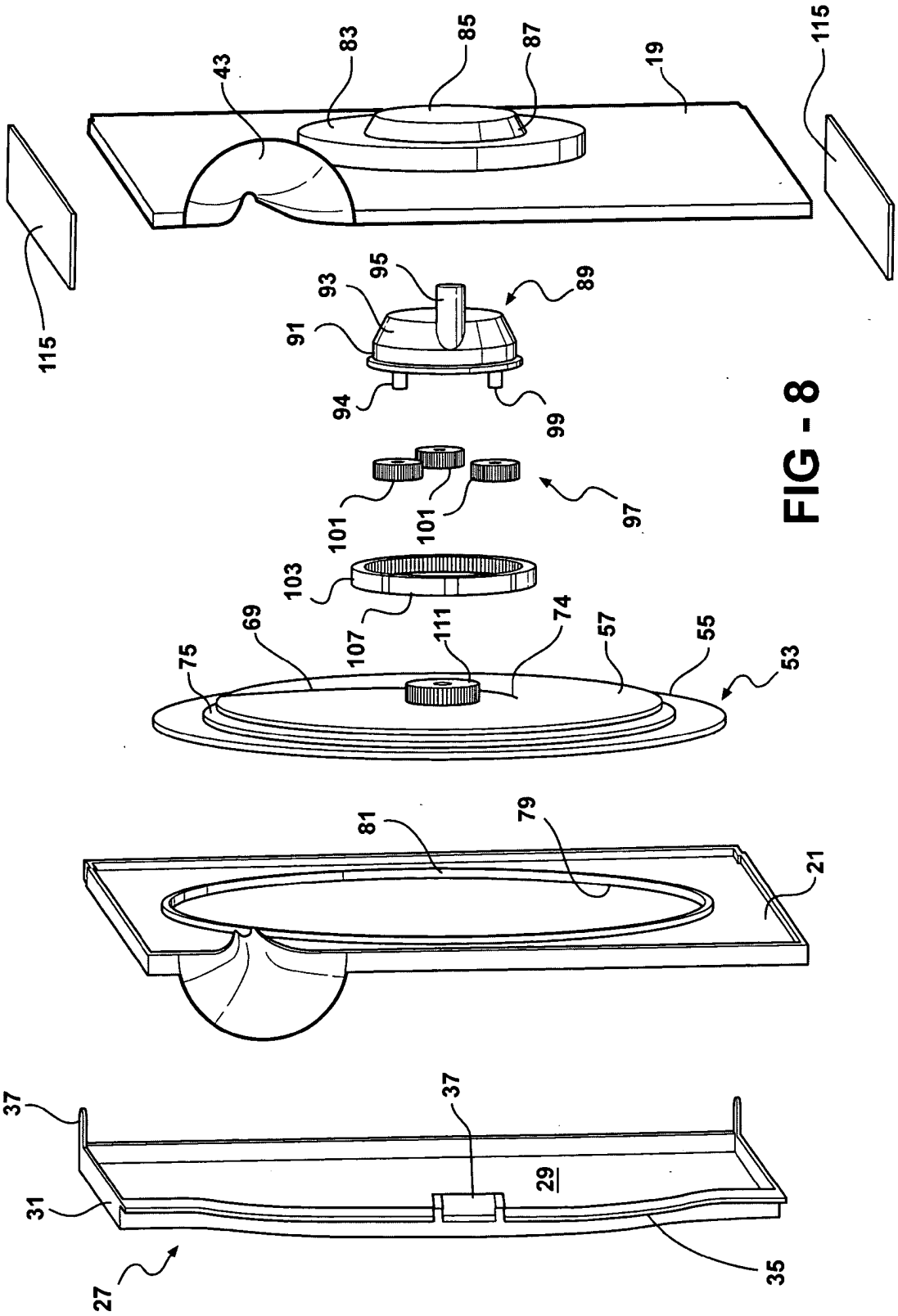


FIG - 8

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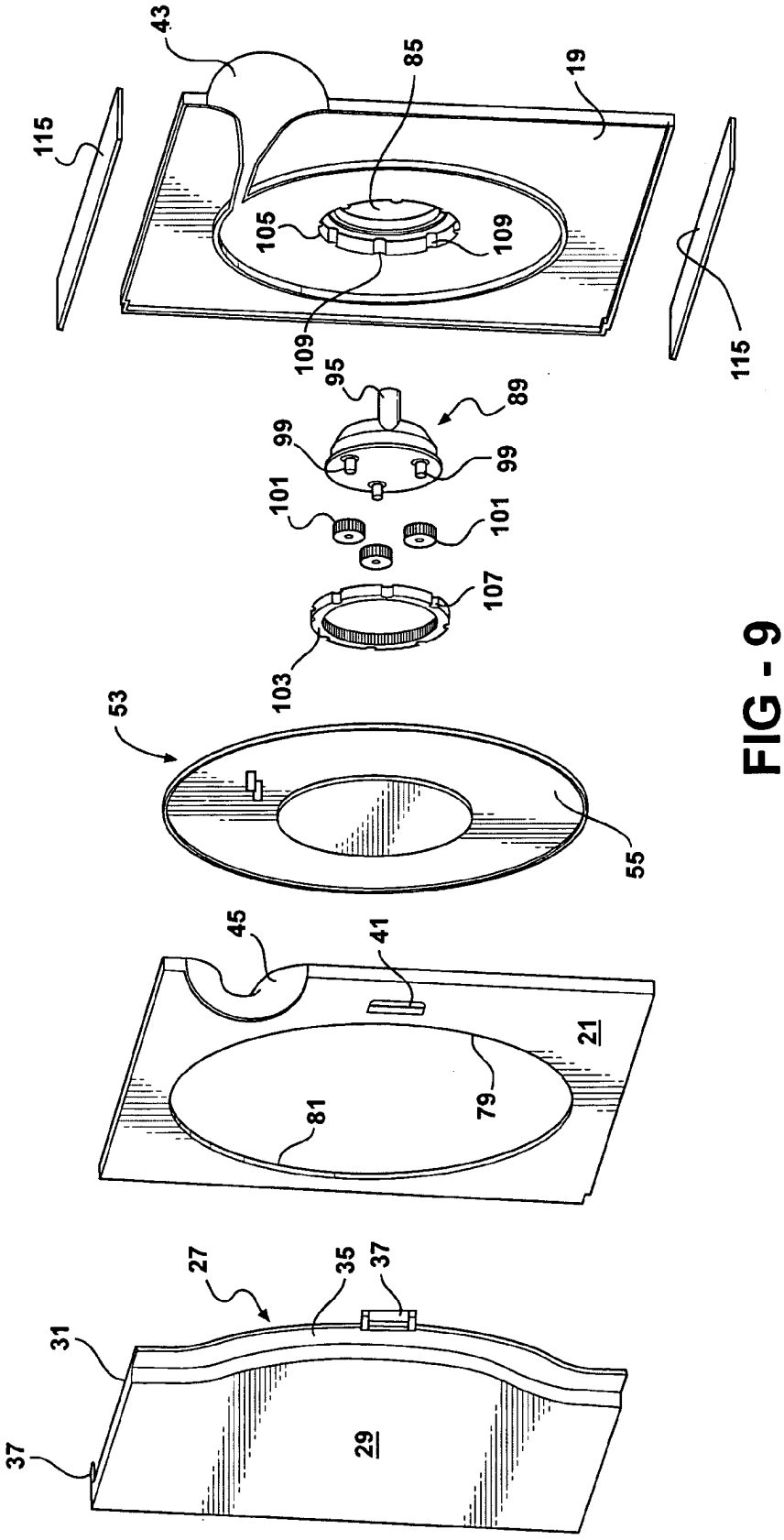


FIG - 9

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FIBER OPTIC STORING AND DISPENSING APPARATUS

[0001] This invention relates to apparatus for storing and dispensing coilable material, such as a fiber optic cable, in and from a protective casing.

BACKGROUND OF THE INVENTION

[0002] When installing, testing, maintaining, or tuning all ranges of fiber optic networks it is necessary to use various test sets. A test set ordinarily will include one or more fiber optic jumper cables for verifying the integrity of signal flow through various parts of the fiber optic circuit. The length of the fiber optic jumper cable depends on the distance that must be spanned by such cable.

[0003] A fiber optic jumper cable used for testing purposes in the field conventionally is accommodated for shipment in a transparent, flimsy, plastic storage bag. Conventionally, a jumper cable is wound about a radius of two inches or more to form a coil which is placed in the plastic bag without any additional protection against damage from externally applied forces, such as that resulting from being stepped on or struck by falling objects. The storage of a fiber optic cable in a flimsy plastic bag is undesirable because of the susceptibility to damage of such cable while accommodated in such bag.

[0004] A fiber optic jumper cable has certain known physical and optical characteristics, such as the cable diameter and its signal transmissivity attenuating properties. The attenuating properties usually are determined at about the time the cable is coiled without signal affecting bends for packaging, whereas the diameter of the cable determines the minimum radius about which the cable may be bent or wound to ensure against damaging the cable. These characteristics may be embraced by the term "minimum bending radius" which, as used herein, means the minimum radius about which a cable may be bent without subjecting the cable to physical damage or any appreciable loss of signal transmissivity.

[0005] When a field engineer extracts a coiled fiber optic jumper cable from the bag in which it is stored, it is common for the engineer to discard the plastic bag and manually uncoil and recoil the cable prior to and following its use. Manual uncoiling of the cable frequently causes the cable to become twisted or kinked, whereas manual recoiling of the cable subjects it to the possibility that it will be wound about a radius less than the minimum bending radius, thereby physically damaging the cable and adversely affect its ability to transmit an optical signal without undue attenuation.

[0006] In those instances in which the test set and a fiber optic jumper cable are shipped or stored in the same container, the cable is exposed to the possibility of damage by the test equipment itself.

[0007] The distance from the test set to the equipment under test varies in different testing environments. The current practice, therefore, requires the selection of a length of cable, which almost always is greater than the distance to be spanned, thereby resulting in excessive sagging of the cable between its ends and requiring the cable, after use, to be recoiled by hand resulting in uncertain bending radii and increasing the risk of damaging the cable.

[0008] A principal object of the invention is to provide apparatus which overcomes these disadvantages.

SUMMARY OF THE INVENTION

[0009] Apparatus constructed in accordance with the invention comprises a casing formed of rigid plastic material defining a hollow housing within which a unitary length of coilable material, such as a fiber optic cable, is supported for extension from and retraction into the housing. Within the housing is a spool about which the cable may be wound. The spool is mounted for rotation about an axis and has therein an annular, relatively deep primary groove and a secondary, relatively shallow groove alongside the primary groove. Accommodated in the primary groove is a coiled, relatively long length section of the cable, and accommodated in the secondary groove is a coiled, relatively short length of the same cable. The spool is rotatable about the axis of rotation by means of a crank and the rotation of the crank is transmitted to the spool by a geared transmission. The radius about which the cable is coiled is no less than the minimum bending radius of the cable, and no part of the cable is subjected to bending about a radius less than the minimum bending radius.

[0010] The grooves are formed by spaced apart side-by-side flanges, one of which is common to both grooves. An intermediary portion of cable passes from the primary groove in the spool to the secondary groove via a lateral passage adjacent the center of the spool and is guided in its transition between the grooves in such manner as to avoid kinking, twisting, or otherwise damaging the cable.

[0011] The cable has two opposite free ends at each of which is secured a fitting or connector. One connector passes through an aperture in the casing so as to enable a desired length of the cable in the primary groove of the spool to be unwound therefrom and extended from the casing a substantial distance. The second connector at the opposite end of the cable removably may be retained at one side of the spool by a retainer. The length of the cable section that extends from the axis of rotation of the spool to the second connector may be substantially less than that of the other section of the cable.

[0012] The casing preferably includes a pivoted door which may be opened and closed so as to enable that portion of the cable wound about the secondary spool groove to be accessed conveniently. When the door is closed, all of the parts within the casing, including both of the cable sections wound on the spool, will be protected by the casing against damage from external forces.

THE DRAWINGS

[0013] The presently preferred embodiment of the apparatus is illustrated in the accompanying drawings wherein:

[0014] **FIG. 1** is a an enlarged, isometric view of a typical fiber optic cable wound in such manner as to provide two coiled sections of different lengths, one of such coils overlying the other;

[0015] **FIG. 2** is a plan view of a casing in which the coiled cable may be stored;

[0016] **FIG. 3** is a reduced scale side elevational view of the casing;

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[0017] **FIG. 4** is a view similar to **FIG. 3**, but with the casing rotated through 90°;

[0018] **FIG. 5** is an isometric view of the casing illustrating an access door in an open position, but omitting most of the cable;

[0019] **FIG. 6** is an isometric view illustrating one side of a spool on which the cable may be wound;

[0020] **FIG. 7** is a view similar to **FIG. 6**, but with parts broken away for clarity of illustration;

[0021] **FIG. 8** is an isometric, exploded view of the apparatus as viewed in one direction;

[0022] **FIG. 9** is a view similar to **FIG. 8**, but showing the apparatus from another direction; and

[0023] **FIG. 10** is an enlarged, vertical sectional view through the spool.

THE PREFERRED EMBODIMENT

[0024] Apparatus constructed in accordance with the presently preferred embodiment of the invention comprises a casing **1** formed from rigid plastic material, such as polycarbonate or that used in the manufacture of so-called jewel cases for compact discs and the like. The casing is adapted to contain a selected length of coilable material, such as a conventional, cladded fiber optic cable **3**. As shown in **FIG. 1** the cable **3** is a single, unitary cable having two coil sections **5** and **7** each of which is wound about a radius at least as great as the minimum bending radius of the cable. The section **5** has a length greater than that of the section **7**. The longer section **5** sometimes will be referred to herein as the primary section and the shorter section **7** as the secondary section. The cable includes an integral intermediate section **9** which forms a transition between the sections **5** and **7**. (The section **9** is lined in **FIG. 1** for clarity of illustration, but is identical to the remainder of the cable.) At one free end of the cable **3** is fixed a conventional fitting or connector **11** and at the opposite free end of the cable **3** is fixed a conventional fitting or connector **13**.

[0025] The casing has parallel panels **15** and **17** which confront one another and form a hollow housing. The two panels have overlying, parallel, spaced apart walls **19** and **21**. The walls include confronting flanges **23** and **25** which ultimately are welded or otherwise suitably secured to one another so as to establish and maintain the spacing of the panel walls **19** and **21** from one another. A cover **27** (best shown in **FIG. 5**) has a planar wall **29** having side flanges **31** and an end flange **33** which is joined to a planar flange **35** provided with a springy latch **37**. The side flanges **31** have fingers **37** provided with openings for the accommodation of pivot pins **39** carried by the wall **21**. The wall **21** also has a latch keeper **41** for the removable accommodation of the latch **37**. The arrangement is such that the cover **27** may be swung about the pivot pins **39** from an open position as shown in **FIG. 5** to a closed and latched position, as is shown in **FIGS. 2-4**.

[0026] The walls **19** and **21** are provided with overlying, circumferential, arcuate sections **43** and **45** and grooves **47** and **49**, respectively, which together form an inwardly tapering, bell-shaped inlet/outlet passage **50** in communication with the interior of the housing. The arcuate sections **43** and **45** are formed on radii which are no less than the minimum bending radius of the cable.

[0027] The apparatus includes a spool **53** on and from which the cable **3** may be wound and unwound. The spool has three side-by-side circular flanges **55**, **57**, and **59**, the flange **55** being sandwiched between the flanges **57** and **59** in spaced relation so as to form two annular grooves **61** and **63** for the accommodation of different sections of the cable **3**. Between the flanges **55** and **57** and adjacent the centers thereof is a circular hub section **65** and between the flanges **55** and **59** is a corresponding hub section **67**. The hub sections form the axis of rotation of the spool and also form the minimum radius about which the respective coil sections are wound, and such radius is at least as great as the minimum bending radius of the cable.

[0028] Since the diameter of the flange **57** is greater than that of the flange **59** the groove **61** has a depth greater than that of the groove **63**. The spool flange **57** has an abbreviated, substantially chordal slot **69** which extends inwardly from the peripheral edge and terminates in an arcuate guide slot section **71** which is formed on a radius corresponding to that of the hub **65**. The slot section **71** overlies an arcuate slit **73** formed in the center flange **55** adjacent the hub **67**. The slit **73** thus provides communication between the grooves **61** and **63** via a lateral passage **74**. The widths of the spool grooves, the slot **69**, the slot **71**, the slit **73**, and the passage **74** are such as freely to accommodate the cable **3**.

[0029] That face of the flange **55** which confronts the flange **57** has a circular stiffening rib **75**, and that face of the flange **55** which confronts the flange **59** has a circular stiffening rib **77** adjacent the periphery of the flange **55**.

[0030] The wall **21** of the casing has an opening **79** which provides access to the spool flange **59**. The rib **77** on that face of the flange **55** which confronts the flange **57** bears against the casing wall **21** and also provides a bearing surface for the spool **53**.

[0031] The wall **19** of the casing has an outwardly projecting chamber **83** at the center of which is an opening **85** encircled by a tapered journal flange **87**. Accommodated in the chamber **83** is a cylindrical crank **89** having a body at one side of which is a disc **91** and a tapered bearing surface **93** which is accommodated in the tapered flange **87**. The crank includes a handle **95** which extends through the opening **85** and beyond the casing wall a distance sufficient to enable an operator to rotate the crank by means of the handle **95**.

[0032] Drive transmission means **97** is provided for transmitting rotation of the crank **89** to the spool **53**. The transmission comprises three circumferentially spaced spindles **99** on which are journaled correspondingly spaced gears **101** which mesh with a ring gear **103** fitted into an opening **105** in the casing wall **19** which is concentric with the opening **85**. The ring gear **103** has circumferentially spaced external notches **107** which accommodate correspondingly spaced projections **109** extending radially inwardly from the edge of the opening **105**, thereby precluding rotation of the ring gear relative to the wall **19**. The gears **101** also mesh with a gear **111** fixed on the flange **57** so as to rotate with the spool **53** about its axis of rotation.

[0033] On the face of the spool flange **55** is secured a retainer **113** comprising a pair of spaced apart, springy

fingers **115** and between which the connector **13** at one free end of the cable **3** removably may be accommodated.

[**0034**] To condition the apparatus for operation, the free end of the shorter or secondary cable length **7**, prior to attaching the connector **13** thereto, is introduced to the slot **71** in the spool flange **57** and thence extended through the lateral passage **74** formed by the slit **73**. The deflection of the cable to enable it to extend through the passage **74** does not subject the cable to bending about a radius less than the minimum bending radius of the cable. The cable may be extended manually through the passage into and through the groove **63** until the intermediate cable section **9** occupies the passage **74**. When the intermediate section **9** of the cable occupies the passage, that portion of the cable which has passed through the passage may be wound in the groove **63** to form the secondary coil section **7**. Following the formation of the coil section **7** the connector **13** may be applied to the free end of the cable **3** and fitted into the retainer **113**.

[**0035**] The longer length of the cable **3** then may be wound about the hub in the spool groove **61** to form the primary coil **5**. The spool **53** then may be placed between the two casing halves with that portion of the cable **3** adjacent the connector **11** extending through the inlet passage **50** formed by the grooves **47** and **49**. The casing halves then may be sonic welded or otherwise secured to one another with the connector **13** occupying a stored position in the passage **50** between the parts **43** and **45**.

[**0036**] When it is desired to make use of the apparatus, the connector **11** may be withdrawn from the passage **50** and extended manually a desired distance from the casing. The extension of the connector **11** will cause some portion of the primary coil **5** to be unwound from the spool and the latter to rotate about its axis. The inlet passage **50** is so positioned that the movement of the cable through the inlet is along a path substantially tangential to the spool groove **61**, thereby avoiding bending the cable about a radius less than the minimum bending radius. Further, the curvature of the surfaces **43** and **45** is on a radius which is no smaller than the minimum bending radius of the cable, thereby ensuring that the cable will not be damaged by being bent too sharply, even if the cable hangs freely from the exit end of the inlet passage **50**.

[**0037**] During the unwinding of the cable from the primary coil **5** and the resulting rotation of the spool, the connector **13** at the opposite end of the cable will be retained in place on the spool flange **59** by the retainer **113**. Although the entire spool **53** will rotate, there will be no twisting of the cable transition section **9** or any other part of the cable. Consequently, there will be no twisting or kinking of any part of the cable.

[**0038**] Following extension of the cable from the primary coil **5** a desired distance, the cover **27** may be moved to its open position so as to expose the connector **13**. The connector may be removed from the retainer **113** and the adjacent part of the cable unwrapped manually from the secondary coil **7** via the spool groove **63** and extended the desired distance. The connectors **11** and **13** may be coupled to the power source (not shown) and the selected equipment unit (not shown).

[**0039**] It sometimes is convenient to mount the casing in a position other than upon the floor or ground. In many instances the junction box between the power source and the operating unit is formed of magnetically permeable metal. It is desirable, therefore, to adhesively apply magnetic strips **115** to opposite ends of the casing so as to provide a stable, removable support for the casing on the junction box or other magnetically permeable devices.

[**0040**] When the function of the jumper cable has been completed, the connector **13** at the free end of the cable section constituting the secondary coil **7** may be uncoupled from the unit to which it is connected, thereby enabling the cable to be rewound by hand in the groove **63** of the spool **53** while the spool remains stationary. When the secondary coil is fully rewound, the connector **13** may be returned to the retainer **113**. The connector **11** then may be uncoupled from the unit to which it was coupled and the crank **89** rotated in such direction as to wind the longer length section of the cable in the spool groove **61** via the inlet passage **50**. The gear transmission **97** illustrated is one which enables about a three to one ratio to be obtained between the crank and the spool. That is, for each revolution of the crank **89**, the spool **53** will be rotated about three revolutions. This accelerates the return of the longer length cable section to the casing.

[**0041**] As the connector **11** at the free end of the longer length cable section approaches the casing, the cable will be guided by the arcuate parts **43** and **45** so as to prevent deflection or bending of the cable about an arc less than the minimum bending radius even if the cable is whipped as the connector **11** approaches the casing.

[**0042**] The casing is so constructed that, as the cable is supported within the casing and as it is extended from and retracted into the casing, no part of the cable is subjected to bending about a radius less than the minimum bending radius of such cable.

[**0043**] Although the description of the invention has been concerned primarily with a fiber optic cable, it will be understood that the invention is not limited to use with such a cable. Instead, the invention is operable with any coilable material.

[**0044**] The disclosed embodiment is representative of a presently preferred form of the invention, but is intended to be illustrative rather than definitive thereof. The invention is defined in the claims.

We claim:

1. Apparatus for storing and dispensing a unitary length of coilable material, said apparatus comprising means forming a casing; a spool having a hub; and means mounting said spool in said housing for rotation about an axis formed by said hub, said spool having a pair of side-by-side annular grooves therein for the accommodation of different sections of such coilable material, said spool having a lateral passage adjacent said hub in communication with both of said grooves, said grooves and said passage being of such width as freely to accommodate the respective sections of said coilable material.

2. The apparatus according to claim 1 wherein said spool has a plurality of spaced apart flanges carried by said hub and defining said grooves, one of said flanges having a diameter greater than that of any other of said flanges thereby enabling said grooves to have different maximum depths.

3. The apparatus according to claim 2 wherein said passage is formed by a slit extending through that flange which is between said grooves.

4. The apparatus according to claim 3 including a slot in that flange which is adjacent the flange in which said slit is formed, said slot being in communication with said slit.

5. The apparatus according to claim 1 wherein said coilable material comprises an elongate fiber optic cable having a first length section coiled in one of said grooves, a second length section coiled in the other of said grooves, and an intermediate section extending through said passage.

6. The apparatus according to claim 5 wherein said first length section has a length greater than that of said second length section.

7. The apparatus according to claim 6 including a fitting at each end of said cable, the fittings at the ends of said first and second length sections being extensible and retractable respectively relative to said casing in response to uncoiling of said first and second length sections from said spool and coiling said first and second length sections on said spool.

8. Apparatus for storing and dispensing a fiber optic cable of selected length and having a minimum bending radius, said apparatus comprising a spool having a hub; flanges carried by said hub forming a pair of side-by-side annular grooves; means mounting said spool for rotation about an axis, said spool having a lateral diagonal passage adjacent said hub in communication with both of said grooves; and an elongate, unitary fiber optic cable of selected length, a first length section of said cable being windable and unwindable in and from one of said grooves, a second length section of said cable being windable and unwindable in and from the other of said grooves, and an intermediate length section of said cable extending through said passage.

9. The apparatus according to claim 8 wherein said passage is adjacent said hub.

10. The apparatus according to claim 8 wherein said first length section is longer than said second length section.

11. The apparatus according to claim 8 wherein one of said grooves has a depth greater than that of the other of said grooves.

12. The apparatus according to claim 8 wherein no part of said cable within said casing is bent about a radius less than said minimum bending radius.

13. The combination of a unitary length of coilable material and a casing in which said material may be stored in coiled condition, said casing comprising a housing; a spool having a plurality of spaced flanges forming two side-by-side annular grooves, one of said flanges being common to both of said grooves; a hub extending laterally of said casing, said one of said flanges having a passage therethrough in communication with both of said grooves; and means mounting said spool in said casing for rotation about an axis extending through said hub, said coilable material having a first length section wound about said hub to form a first coil occupying one of said grooves, said coilable material having a second length section wound about said hub to form a second coil occupying the other of said grooves, said coilable material having an intermediate section between said first and second sections extending from one of said grooves to the other of said grooves via said passage, said casing having an inlet through which a selected portion of one of said length sections may pass from said first coil for extension from said casing, a selected portion of the other of said length sections being unwindable from the other of said grooves and from said second coil for extension from said casing.

14. The combination according to claim 13 including rotatable crank means; and gear transmission means coupling said crank means and said spool for rotating the latter in response to rotation of said crank means.

15. The combination according to claim 14 wherein said coilable material has a minimum bending radius and wherein said inlet has arcuate surfaces engageable by said coilable material, said arcuate surfaces being formed on a radius at least as great as said minimum bending radius.

16. The combination according to claim 13 wherein one of said length sections is longer than the other of said length sections.

17. The combination according to claim 16 wherein one of said grooves has a depth greater than that of the other of said grooves and wherein the longer length section is accommodated in the groove having the greater depth.

18. The combination according to claim 13 wherein one of said flanges has a peripheral edge from which a slot extends toward and communicates with said passage.

19. The combination according to claim 13 wherein each of said first and said second length sections has a free end, one of said flanges having retainer means for releasably retaining the free end of said other of said length sections.

20. The combination according to claim 13 wherein said coilable material has a minimum bending radius and wherein no part of said coilable material within said casing is bent on a radius less than said minimum bending radius.

* * * * *

IPR2025-01119
Ex. 2004 10/10
Belden EX1005

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Filer:	David G. Schmaltz/Aimee Stevens
Attorney Docket Number:	02316.2584US22/ADC003176

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	300	300
UTILITY SEARCH FEE	1111	1	660	660
UTILITY EXAMINATION FEE	1311	1	760	760
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1720**

Electronic Acknowledgement Receipt

EFS ID:	31554327
Application Number:	15875564
International Application Number:	
Confirmation Number:	6390
Title of Invention:	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL
First Named Inventor/Applicant Name:	Scott C. Kowalczyk
Customer Number:	142510
Filer:	David G. Schmaltz/Aimee Stevens
Filer Authorized By:	David G. Schmaltz
Attorney Docket Number:	02316.2584US22/ADC003176
Receipt Date:	19-JAN-2018
Filing Date:	
Time Stamp:	16:11:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1720
RAM confirmation Number	012218INTEFSW16121300
Deposit Account	132725
Authorized User	Aimee Stevens

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

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	2018-01-19-ADS-02316-2584US22.PDF	1823797 a085be0d86b5e14add5027e6790f160ce6c13213	no	10
Warnings:					
Information:					
2		2018-01-19-CONTINUATION-APP-02316-2584US22-ADC003176.PDF	100271 60f57475927c5e88387ab4e44dfd07b4fcd80098	yes	17

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	12
Claims	13	16
Abstract	17	17

Warnings:					
Information:					
3	Drawings-only black and white line drawings	2018-01-19-Drawings-02316-2584US22-ADC003176.PDF	251296 9858f645c064016d896b767eaa745ead9df2e3d6	no	14
Warnings:					
Information:					
4	Oath or Declaration filed	Signed-Declaration-from-Parent-Kowalczyk-02316-2584US22.PDF	76866 708c7736ed0df56d8e7207e8807c2cb312b4da07	no	1
Warnings:					
Information:					
5	Oath or Declaration filed	Signed-Declaration-from-Parent-Coan-02316-2584US22.PDF	161143 d8f5917e58a62895019d5474f86efe9934920758	no	2

Warnings:					
Information:					
6	Oath or Declaration filed	Signed-Declaration-from-Parent-Kaml-02316-2584US22.PDF	74762 b025b2c04332f176ad0ff08e493ba5c40f9c2f18	no	1
Warnings:					
Information:					
7	Information Disclosure Statement (IDS) Form (SB08)	2018-01-19-IDS-02316-2584US22.PDF	301187 7b04a6664e5624b06549e7990f870fd3ac41cb5f	no	17
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
8	Non Patent Literature	Preliminary-Response-by-Patent-Owner.PDF	732826 6752c45c53ec8cf1899d3c43fe90c7e5cdaee6b2	no	71
Warnings:					
Information:					
9	Non Patent Literature	Ex-2001.PDF	530232 7947e41cb3732da10618ae56465c1eff34d62b38	no	37
Warnings:					
Information:					
10	Non Patent Literature	Ex-2002.PDF	884145 b1160e509e86847d06d657b0654e25129f01dfa2	no	12
Warnings:					
Information:					
11	Non Patent Literature	Ex-2003.PDF	1059589 778f9c727f5b1704005100308d5490a1a4aeb8e4	no	14
Warnings:					
Information:					
12	Non Patent Literature	Ex-2004.PDF	2206656 bcda0aef8cd87a77afe9172e525de3e4450fc165	no	10
Warnings:					

Information:					
13	Non Patent Literature	Ex-2005.PDF	2266761 21a041480638a3b9269afa7cf8252faa00f0f43f	no	4
Warnings:					
Information:					
14	Non Patent Literature	Ex-2006.PDF	1836595 c8fdf73e89bba739e43414c0cc730ef959ad1fae	no	4
Warnings:					
Information:					
15	Fee Worksheet (SB06)	fee-info.pdf	35341 9032ba442ff236bde9de908460664ee804fb9f17	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	12341467	

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.

New Applications Under 35 U.S.C. 111
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.
National Stage of an International Application under 35 U.S.C. 371
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.
New International Application Filed with the USPTO as a Receiving Office
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.

PTO/AIA/14 (11-15)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	02316.2584US22/ADC003176
	Application Number	
Title of Invention	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL	

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
	Scott	C.	Kowalczyk	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Savage	MN	US

Mailing Address of Inventor:

Address 1	7628 Southridge Court
Address 2	
City	Savage
State/Province	MN
Postal Code	55378
Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jonathan	Walter	Coan	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Savage	MN	US

Mailing Address of Inventor:

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Address 2	
City	Savage
State/Province	MN
Postal Code	55378
Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jonathan	R.	Kaml	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	02316.2584US22/ADC003176
	Application Number	
Title of Invention	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL	

City	Shakopee	State/Province	MN	Country of Residence i	US

Mailing Address of Inventor:

Address 1	2360 Vierling Drive East		
Address 2			
City	Shakopee	**State/Province**	MN
Postal Code	55379	**Country** i	US

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

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	142510		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL		
Attorney Docket Number	02316.2584US22/ADC003176	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	14	**Suggested Figure for Publication (if any)**	

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 i

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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	02316.2584US22/ADC003176
	Application Number	
Title of Invention	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL	

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	142510		

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	15/470311	2017-03-27		
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15/470311	Continuation of	14/979870	2015-12-28	9606319	2017-03-28
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14/979870	Continuation of	14/539459	2014-11-12	9261666	2016-02-16
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14/539459	Continuation of	14/132691	2013-12-18	8891931	2014-11-18
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14/132691	Continuation of	13/924191	2013-06-21	8705929	2014-04-22

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	02316.2584US22/ADC003176
	Application Number	
Title of Invention	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL	

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13/924191	Continuation of	13/479015	2012-05-23	8494333	2013-07-23

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13/479015	Continuation of	13/032337	2011-02-22	8189984	2012-05-29

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13/032337	Continuation of	12/793556	2010-06-03	7894701	2011-02-22

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12/793556	Continuation of	12/182705	2008-07-30	7756379	2010-07-13

Prior Application Status	Expired	Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
12/182705	Claims benefit of provisional	61/029248	2008-02-15

Prior Application Status	Expired	Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
12/182705	Claims benefit of provisional	60/954214	2007-08-06

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)

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	02316.2584US22/ADC003176
	Application Number	
Title of Invention	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL	

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	02316.2584US22/ADC003176
	Application Number	
Title of Invention	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL	

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.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	02316.2584US22/ADC003176
	Application Number	
Title of Invention	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL	

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	CommScope Technologies LLC		
Mailing Address Information For Applicant:			
Address 1	1100 CommScope Place SE		
Address 2			
City	Hickory	**State/Province**	NC
Country	US	Postal Code	28602
Phone Number		Fax Number	
Email Address			

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.

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	02316.2584US22/ADC003176
	Application Number	
Title of Invention	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL	

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. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

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	/David G. Schmaltz/			Date (YYYY-MM-DD)	2018-01-19
First Name	David G.	Last Name	Schmaltz	Registration Number	39828

Additional Signature may be generated within this form by selecting the Add button. Add

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	02316.2584US22/ADC003176
	Application Number	
Title of Invention	FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL	

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FIBER OPTIC ENCLOSURE WITH INTERNAL CABLE SPOOL

Cross-Reference to Related Applications

This application is a continuation of application Serial No. 15/470,311, filed March 27, 2017, which is a continuation of application Serial No. 14/979,870, filed December 28, 2015, now U.S. Patent No. 9,606,319, which is a continuation of application Serial No. 14/539,459, filed November 12, 2014, now U.S. Patent No. 9,261,666, which is a continuation of application Serial No. 14/132,691, filed December 18, 2013, now U.S. Patent No. 8,891,931, which is a continuation of application Serial No. 13/924,191, filed June 21, 2013, now U.S. Patent No. 8,705,929, which is a continuation of application Serial No. 13/479,015, filed May 23, 2012, now U.S. Patent No. 8,494,333, which is a continuation of application Serial No. 13/032,337, filed February 22, 2011, now U.S. Patent No. 8,189,984, which is a continuation of application Serial No. 12/793,556, filed June 3, 2010, now U.S. Patent No. 7,894,701, which is a continuation of application Serial No. 12/182,705, filed July 30, 2008, now U.S. Patent No. 7,756,379, which application claims the benefit of provisional application Serial Nos. 61/029,248, filed February 15, 2008 and 60/954,214, filed August 6, 2007, which applications are incorporated herein by reference in their entirety.

Technical Field

The present disclosure relates to fiber optic enclosure, and more particularly, to a fiber optic enclosure with cable payout.

Background

As demand for telecommunications increases, fiber optic networks are being extended in more and more areas. In facilities such as multiple dwelling units, apartments, condominiums, businesses, etc., fiber optic enclosures are used to provide a subscriber access point to the fiber optic network. These fiber optic enclosures are connected to the fiber optic network through subscriber cables connected to a network

hub. However, the length of subscriber cable needed between the fiber optic enclosure and the network hub varies depending upon the location of the fiber optic enclosure with respect to the network hub. As a result, there is a need for a fiber optic enclosure that can effectively manage varying lengths of subscriber cable.

Summary

An aspect of the present disclosure relates to a fiber optic enclosure assembly for enclosing optical fiber connections. The fiber optic enclosure assembly includes a housing having an interior region and a bearing mount disposed in the interior region of the housing. A cable spool is connectedly engaged with the bearing mount such that the cable spool selectively rotates within the housing. A termination module is disposed on the cable spool so that the termination module rotates in unison with the cable spool.

Another aspect of the present disclosure relates to a method of paying out a fiber optic cable from a fiber optic enclosure. The method includes rotating a cable spool, which has a subscriber cable coiled around a spooling portion of the cable spool, about an axis of a housing of the fiber optic enclosure until a desired length of subscriber cable is paid out. The cable spool is disposed in an interior region of the fiber optic enclosure and a termination module is disposed on the cable spool.

A variety of additional aspects will be set forth in the description that follows. These aspects can relate to individual features and to combinations of features. It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the broad concepts upon which the embodiments disclosed herein are based.

Description of the Drawings

FIG. 1 is a schematic representation of a fiber optic network that includes a fiber optic enclosure having features that are examples of inventive aspects in accordance with the principles of the present disclosure.

FIG. 2 is an isometric view of the fiber optic enclosure of FIG. 1.

FIG. 3 is an isometric view of the fiber optic enclosure of FIG. 2 with a cover in an open position.

FIG. 4 is a front view of the fiber optic enclosure of FIG. 2 with the cover in the open position.

FIG. 5 is an exploded isometric view of the fiber optic enclosure of FIG. 2.

FIG. 6 is a perspective view of a fiber optic adapter suitable for use within the fiber optic enclosure of FIG. 2.

FIG. 7 is a cross-sectional view of the fiber optic adapter taken on line 7-7 of FIG. 6.

FIG. 8 is an isometric view of another embodiment of a fiber optic enclosure.

FIG. 9 is a front view of the fiber optic enclosure of FIG. 8.

FIG. 10 is a top view of the fiber optic enclosure of FIG. 8.

FIG. 11 is a side view of the fiber optic enclosure of FIG. 8.

FIG. 12 is an isometric view of the fiber optic enclosure of FIG. 8, showing cables entering and exiting the enclosure.

FIG. 13 is an isometric view of the fiber optic enclosure of FIG. 12 without the cover.

FIG. 14 is a front view of the fiber optic enclosure of FIG. 13.

FIG. 15 is an exploded isometric view of the fiber optic enclosure of FIG. 13.

FIG. 16 is an isometric view of the cable spool of the fiber optic enclosure of FIG. 13.

FIG. 17 is a further isometric view of the fiber optic enclosure of FIG. 12, with the cover in the pivoted open position.

FIG. 18 is an exploded view of a shipping container in which is disposed the fiber optic enclosure of FIG. 8.

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Detailed Description

Reference will now be made in detail to the exemplary aspects of the present disclosure that are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like structure.

Referring now to FIG. 1, a schematic representation of a fiber optic network, generally designated 11, in a facility 13 (e.g. individual residence, apartment, condominium, business, etc.) is shown. The fiber optic network 11 includes a feeder cable 15 from a central office (not shown). The feeder cable 15 enters a feeder cable input location 17 (e.g., a fiber distribution hub, a network interface device, etc.) having one or more optical splitters (e.g., 1-to-8 splitters, 1-to-16 splitters, or 1-to-32 splitters) that generate a number of individual fibers. In the subject embodiment, and by way of example only, the fiber distribution hub 17 is located on a lower level 19 of the facility 13. Each unit in the facility 13 includes a fiber optic enclosure, generally designated 21, with a subscriber cable 22 extending from each of the fiber optic enclosures 21 to the fiber distribution hub 17. The subscriber cable 22 extending between the fiber distribution hub 17 and the fiber optic enclosure 21 typically includes multiple optical fibers.

Referring now to FIGS. 2-5, the fiber optic enclosure 21 will now be described. The fiber optic enclosure 21 includes a housing, generally designated 23, having a cover 25.

The housing 23 includes a base 27, a first sidewall 29, and an oppositely disposed second sidewall 31. The first and second sidewalls 29, 31 extend outwardly from the base 27 such that the base 27 and the first and second sidewalls 29, 31 cooperatively define an interior region 33. In the subject embodiment, the cover 25 is hingedly engaged with a sidewall 35 that is connected to the base 27 and the first and second sidewalls 29, 31. It will be understood, however, that the scope of the present disclosure is not limited to the cover 25 being hingedly engaged the sidewall 35.

A cable spool, generally designated 37, is disposed in the interior region 33 of the fiber optic enclosure 21. The cable spool 37 includes a spooling portion 39,

around which subscriber cable 22 is coiled (shown schematically in FIG. 1). The cable spool 37 further includes an axial end 41.

In the subject embodiment, the axial end 41 of the cable spool 37 defines a termination area 43 (shown as a dashed line in FIG. 5). Disposed in the termination area 43 is a termination module, generally designated 45. The termination module 45 of the fiber optic enclosure 21 serves as the dividing line between the incoming fibers and the outgoing fibers.

In the subject embodiment, the termination module 45 includes an adapter plate 47. The adapter plate 47 is an L-shaped bracket having a first side 49 (shown in FIG. 4) and a second side 51. The first side 49 defines a plurality of mounting holes 53 while the second side 51 defines an adapter slot 55. It will be understood, however, that the scope of the present disclosure is not limited to the adapter plate 47 being an L-shaped bracket. The first side 49 of the adapter plate 47 is rigidly mounted (i.e., non-rotatable) to the axial end 41 of the cable spool 37 through a plurality of fasteners 57 (e.g., bolts, screws, rivets, etc.) which are inserted through the mounting holes 53 in the first side 49 and in connected engagement with the axial end 41 of the cable spool 37.

The adapter slot 55 in the second side 51 of the adapter plate 47 is adapted to receive a plurality of adapters, generally designated 401. In the subject embodiment, the adapters 401 are SC-type adapters 401, although it will be understood that the scope of the present disclosure is not limited to the use of SC-type adapters 401. Similar SC-type adapters 401 have been described in detail in commonly owned U.S. Pat. No. 5,317,663, the disclosure of which is incorporated herein by reference.

Referring now to FIGS. 6 and 7, the SC-type adapter 401 includes a main body 403 with a pair of tabs 405, 407 located on the exterior of the main body 403. The tabs 405, 407 serve to support the adapter 401 in the adapter slot 55. The adapter 401 further includes a pair of retaining clips 409, 411, with one retaining clip 409, 411 associated with each tab 405, 407. A front side 413 of the adapter 401 is inserted into the adapter slot 55. As the adapter 401 is inserted through the adapter slot 55, the retaining clips 409, 411 compress against the main body 403. The adapter 401 is inserted into the adapter slot 55 until the tabs 405, 407 abut the adapter plate 47.

With the tabs 405, 407 abutting the adapter plate 47, the retaining clips 409, 411 decompress on the opposite side of the adapter plate 47, thereby retaining the adapter plate 47 between the retaining clips 409, 411 and the tabs 405, 407.

In an alternate embodiment, the termination module includes a plurality of sliding adapter modules. Similar sliding adapter modules have been described in detail in commonly owned U.S. Pat. Nos. 5,497,444; 5,717,810, 6,591,051 and U.S. Pat. Pub. No. 2007/0025675, the disclosures of which are incorporated herein by reference.

Referring now to FIGS 3-5, the axial end 41 of the cable spool 37 further defines a slack storage area 59. The slack storage area 59 includes a cable management spool 61 disposed on the axial end 41 of the cable spool 37. The cable management spool 61 is sized such that an outer radius of the cable management spool 61 is larger than the minimum bend radius of the optical fibers so as to avoid attenuation damage to the optical fibers during storage.

The cable management spool 61 and the axial end 41 of the cable spool 37 cooperatively define a cable passage 63 that extends axially through the cable management spool 61 and through the axial end 41 of the cable spool 37. The cable passage 63 allows connectorized ends of incoming optical fibers to pass from the spooling portion 39 of the cable spool 37 to the slack storage area 59. The connectorized ends of the incoming optical fibers are then routed from the slack storage area 59 to the front sides 413 of the adapters 401 in the termination area 43.

Referring now to FIG. 5, the fiber optic enclosure 21 further includes a bearing mount, generally designated 71. In the subject embodiment, the bearing mount 71 is disposed on the base 27 of the housing 23. An outer surface 73 of the bearing mount 71 is adapted for a bearing 75 (shown as cross-hatching). In the subject embodiment, the bearing 75 is a needle bearing. However, it will be understood that the scope of the present disclosure is not limited to the bearing 75 being a needle bearing as the bearing 75 could also include a bushing, low-friction coating, etc.

In one embodiment, the bearing 75 is engaged with an inner diameter of a central hole of the cable spool 37. In another embodiment, a rotary plain bearing is formed between the outer surface 73 of the bearing mount 71 and the inner diameter of the central hole of the cable spool 37. In this embodiment, the outer diameter of the

bearing mount 71 is sized to fit within an inner diameter of a central hole of the spooling portion 39. The engagement of the bearing mount 71 and the spooling portion 39 of the cable spool 37 allows the cable spool 37 to rotate about the central axis 77 of the bearing mount 71.

Referring now to FIGS. 1 and 5, the subscriber cable 22, which includes multiple optical fibers, is coiled around the spooling portion 39 of the cable spool 37. In order to protect the subscriber cable 22 from attenuation resulting from the coiling of the subscriber cable 22 around the spooling portion 39, the cable spool 37 has an outer circumferential surface having a radius that is greater than the minimum bend radius of the subscriber cable 22. The subscriber cable 22 includes a first end having connectorized ends, which are inserted through the cable passage 63 and connectedly engaged with the first ends 413 of the adapters 401. A second end of the subscriber cable 22 is configured for connectivity with the fiber distribution hub 17. However, as shown in FIG. 1, the length of subscriber cable 22 needed between each of the fiber optic enclosures 21 in the facility 13 and the fiber distribution hub 17 will vary depending upon the location of each fiber optic enclosure 21 with respect to the fiber distribution hub 17.

A method of installing and using the fiber optic enclosure 21 to account for the varying lengths of subscriber cable 22 needed between the fiber optic enclosure 21 and the fiber distribution hub 17 will now be described. The fiber optic enclosure 21 provides dual functionality by serving as a storage location for the subscriber cable 22 and by selectively paying out a desired length of the subscriber cable 22.

A first length of subscriber cable 22 is stored in the fiber optic enclosure 21 by coiling the length of subscriber cable 22 around the cable spool 37. The first length of subscriber cable 22 includes an installation length, which is sufficiently long to extend from the mounting location of the enclosure 28 to the fiber distribution hub 17, and an excess length, which is the length of subscriber cable 22 remaining on the cable spool 37 after the installation length has been paid out. In one embodiment, the first length is greater than or equal to about 100 feet. In another embodiment, the first length of subscriber cable 22 is greater than or equal to about 200 feet. In another embodiment, the first length of subscriber cable 22 is greater than or equal to about

300 feet. In another embodiment, the first length of subscriber cable 22 is greater than or equal to about 400 feet. In another embodiment, the first length of subscriber cable 22 is greater than or equal to about 500 feet. In another embodiment, the first length of subscriber cable 22 is in the range of about 100 to about 2,000 feet. In another embodiment, the first length of subscriber cable 22 is in the range of about 100 to about 1,500 feet. In another embodiment, the first length of subscriber cable 22 is in the range of about 500 to about 1,500 feet. In a preferred embodiment, the first length of subscriber cable 22, which is coiled around the cable spool 89, is in the range of 100 to 500 feet.

In one embodiment, a second length, or the excess length, of subscriber cable 22 is stored around the cable spool 37 after the first length of subscriber cable 22 has been paid out. If the first length of subscriber cable 22 is greater than the installation length of subscriber cable 22, the second length, or excess length, is stored around the cable spool 37.

The second function of the fiber optic enclosure 21 involves the selective payout of the subscriber cable 22. With the cable spool 37 mounted to the bearing mount 71, the first end of the subscriber cable 22 in connected engagement with the front sides 413 of the adapters 401 and the outgoing optical fibers disengaged from the back sides of the adapters 401, the subscriber cable 22 can be paid out through fiber ports 79 disposed in the first and second sidewalls 29, 31. The subscriber cable 22 is paid out of the fiber optic enclosure 21 by selectively rotating the cable spool 37 with respect to the housing 23 about the central axis 77 of the bearing mount 71. As the termination module 45 is disposed on the axial end 41of the cable spool 37, the selective rotation of the cable spool 37 with respect to the housing 23 results in the selective rotation of the termination module 45. Since the termination module 45 rotates unitarily with or in unison with the cable spool 37, the second end of the subscriber cable 22 can be paid out without the first end of the subscriber cable 22 being pulled out of the termination module 45.

Once the desired length of subscriber cable 22 has been paid out, the rotation of the cable spool 37 is ceased. At this point, the position of the cable spool 37 can be fixed such that it does not rotate relative to the housing 23. In one embodiment,

a pin is inserted through an opening in the axial end 41 of the cable spool 37 and through a corresponding opening in the base 27 of the housing 23 to fix the position of the cable spool 37 with respect to the housing 23. It will be understood, however, that the scope of the present disclosure is not limited to the use of a pin to fix the position of the cable spool 37 with respect to housing 23.

An alternate method of selectively paying-out subscriber cable 22 from the fiber optic enclosure 21 will now be described. With the fiber optic enclosure 21 positioned near the fiber distribution hub 17, the second end of the subscriber cable 22 is unwound from the cable spool 37. In one embodiment, the second end is optically connected to the fiber distribution hub 17. With the second end of the subscriber cable 22 optically connected to the fiber distribution hub 17 and the first end of the subscriber cable 22 in connected engagement with the termination module 45, the fiber optic enclosure 21 is transported away from the fiber distribution hub 17. In one embodiment, the fiber optic enclosure 21 is carried away from the fiber distribution hub 17 by an installer. In another embodiment, the fiber optic enclosure 21 is transported away from the fiber distribution hub 17 in a wheeled cart (e.g., dolly, 4-wheeled cart, etc.). In a preferred embodiment, the fiber optic enclosure is disposed in a packaging enclosure (e.g., a box) during transport. As the fiber optic enclosure 21 is transported away from the fiber distribution hub 17, the subscriber cable 22 unwinds from the cable spool 37 causing the cable spool 37 to rotate within the interior region 33 of the housing 23, which is disposed in the packaging enclosure. When the fiber optic enclosure 21 has been transported to its mounting location, the fiber optic enclosure 21 is removed from the packaging enclosure, mounted to the mounting location. The cable spool 37 can be fixed in position relative to the housing 23 to prevent inadvertent rotation of the cable spool 37.

Referring now to FIGS. 8-18, an alternate embodiment of a fiber optic enclosure 121 is shown. The fiber optic enclosure 121 includes a housing 123 and a hinged cover 125.

The housing 123 includes a base wall 120, a first sidewall 127 and an oppositely disposed second sidewall 128. The first and second sidewalls 127, 128

extend outwardly from the base wall 120 such that the base wall 120 and the first and second sidewalls 127, 128 cooperatively define an interior region 130.

In the subject embodiment, the first sidewall 127 of the housing 123 defines a first port 131 while the second sidewall 128 defines a second port 132. The subscriber cable 122 enters/exits the fiber optic enclosure 121 at the first port 131 or at the second port 132. In the subject embodiment, both of the first and second ports 131, 132 are provided as knockout portions.

A cable spool 137 is positioned within the interior region 130 of enclosure 121. In the subject embodiment, the cable spool 137 is adapted for rotation within the interior region 130 of the enclosure 121. In the subject embodiment, the cable spool 137 includes a first axial end 136, an oppositely disposed second axial end 138 and a spool portion 139. The spool portion 139 is disposed between the first and second axial ends 136, 138 of the cable spool 137. The spool portion 139 is adapted to receive a subscriber cable 122 coiled around or spooled on the spool portion 139.

With the subscriber cable 122 spooled on the spool portion 139, the subscriber cable 122 can be selectively paid out by rotating the cable spool 137. As the cable spool 137 is rotated, the subscriber cable 122 is unwound from the spool portion 139 of the cable spool 137. After a desired length of subscriber cable 122 has been paid out, pin openings 141 can be used with a pin to fix the position of cable spool 137 relative to housing 123.

The subscriber cable 122 is shown with a connectorized end 144 (e.g., MTP connector) for connecting to the fiber distribution hub 17 or other equipment. An opposite end of the subscriber cable 122 passes through an opening 145 disposed in the first axial end 136 of the cable spool 137. After passing through the opening 145, the subscriber cable 122 is routed to a fanout 147 disposed on the first axial end 136 of the cable spool 137 where the cable is broken out into individual fibers 124 having connectorized ends 146 (e.g., SC connectors).

A cable management spool 161 is also disposed on the first axial end 136 of the cable spool 137. The cable management spool 161 manages fibers 124. In the subject embodiment, the cable management spool 161 includes a plurality of

fingers 162 disposed on an end of the cable management spool 161. The fingers 162 assist with cable retention.

The first axial end 136 of the cable spool 137 further includes an outer guide wall 163. In the subject embodiment, the outer guide wall 163 is disposed at a portion of the peripheral edge of the first axial end 136 adjacent to the cable management spool 161. In the subject embodiment, the outer guide wall 163 extends outwardly in a direction that is generally perpendicular to the first axial end 136.

The outer guide wall 163 includes with a cable finger 164 disposed at an end of the outer guide wall 163 that is opposite the end engaged with the first axial end 136 of the cable spool 137. The cable finger 164 assists with retention and protection of the fibers 124.

An adapter plate 149 is disposed on the first axial end 136 of the cable spool 137. In the subject embodiment, the adapter plate 149 includes separate openings 151. Each of the separate openings 151 is adapted to receive two adapters 401.

In the depicted embodiment of FIG. 16, the cable management spool 161, the outer guide wall 163 and the adapter plate 149 are integrally formed with the first axial end 136 of the cable spool 137. In the subject embodiment, the first axial end 136 of the cable spool 137 is formed from plastic. In another embodiment, the first and second axial ends 136, 138, the spool portion 139, the adapter plate 149, the cable management spool 161 and the outer guide wall 163 are integrally formed from a plastic material.

Referring now to FIGS. 13 and 14, the fiber optic enclosure 121 is shown connected to a second subscriber cable 126. After the subscriber cable 122 is paid out and cable spool 137 fixed in position relative to the housing 123, individual connectorized ends of the second subscriber cables 126 can be connected to the fibers 124 at adapters 401 of adapter plate 149. The second subscriber cables 126 exit the fiber optic enclosure 121 at a port 136 in a side 165 of the housing 123. In the illustrated embodiment, a slotted foam member 138 is disposed in the port 136. The slotted foam member 138 includes a plurality of slots through which the second subscriber cables 126 can be inserted in order to prevent or reduce the risk of ingress of environmental contamination (e.g., dust, water, etc.).

While the fiber optic enclosure 121 is shown mounted to a mounting location 183 (e.g., wall, pole, etc.) in FIGS. 1 and 17, it will be understood that the subscriber cable 122 can be paid out from the fiber optic enclosure 121 while the fiber optic enclosure 121 is either mounted to a mounting location 183 or removed from the mounting location 183. As shown in FIG. 18, the subscriber cable 122 could be paid out while the fiber optic enclosure 121 is still packaged in a shipping container 179 provided there is an opening 181 in the shipping container 179 through which the subscriber cable 122 can be pulled. After the subscriber cable 122 has been paid out, the fiber optic enclosure 121 can be removed from the shipping container 179 and mounted to the mounting location 183.

Various modifications and alterations of this disclosure will become apparent to those skilled in the art without departing from the scope and spirit of this disclosure, and it should be understood that the inventive scope of this disclosure is not to be unduly limited to the illustrative embodiments set forth herein.

WHAT IS CLAIMED IS:

1. A fiber optic enclosure comprising:

a housing including a cover at a front of the housing, the cover being movable between an open position and a closed position;

the housing defining a cable opening for routing a subscriber cable into the housing;

a spool mountable to the housing and positionable within the housing;

a fiber optic cable spooled about a spooling portion of the spool, the fiber optic cable including at least one optical fiber;

a fiber optic connector coupled to the at least one optical fiber of the fiber optic cable;

a fiber optic adapter including a first connector port for receiving the fiber optic connector and also including an opposite second connector port;

the fiber optic cable being payable from the spool while the spool is mounted to the housing, wherein the spool rotates relative to the housing about an axis of rotation as the fiber optic cable is paid out from the spool, and wherein the fiber optic connector rotates in concert with the spool as the fiber optic cable is paid out from the spool; and

wherein access for plugging a connectorized end of the subscriber cable into the second connector port of the fiber optic adapter is: a) available from the front of the housing when the cover is in the open position; and b) not available from the front of the housing when the cover is in the closed position.

2. The fiber optic enclosure of claim 1, further comprising a hinge for allowing the cover to pivot between the open and closed positions.

3. The fiber optic enclosure of claim 1, wherein the fiber optic connector is supported on the spool when the fiber optic cable is paid out from the spool.

4. The fiber optic enclosure of claim 1, wherein the fiber optic adapter is coupled to the fiber optic connector, and wherein the fiber optic adapter rotates in concert with the spool as the fiber optic cable is paid out from the spool.

5. The fiber optic enclosure of claim 1, wherein the fiber optic cable includes a plurality of optical fibers, wherein a plurality of fiber optic connectors terminate the plurality of optical fibers at the first end of the fiber optic cable, wherein the fiber optic connectors rotate in concert with the spool as the fiber optic cable is paid out from the spool, wherein the telecommunications enclosure further includes a plurality of fiber optic adapters, wherein the plurality of fiber optic connectors are secured within the plurality of fiber optic adapters when the fiber optic cable is paid out from the spool.

6. The fiber optic enclosure of claim 1, wherein a cable seal is provided at the cable opening.

7. The fiber optic enclosure of claim 1, further comprising a cable manager for storing slack cable in a loop within the housing at a location separate from the spooling portion of the spool.

8. The fiber optic enclosure of claim 7, wherein the cable manager is positioned such that the loop is not co-axial with the axis of rotation of the spool.

9. The fiber optic enclosure of claim 7, wherein the cable manager includes a curved guide surface.

10. The fiber optic enclosure of claim 9, wherein the cable manager is configured for storing the slack cable in a coil.

11. The fiber optic enclosure of claim 9, wherein the cable manager includes a slack storage spool which defines the curved guide surface.

12. The fiber optic enclosure of claim 1, further comprising means for storing slack cable in a coil within the housing.

13. A fiber optic enclosure comprising:

a housing including a front and a back, the housing including a front cover movable between an open position and a closed position, the housing including sides that extend between the front and the back;

the housing defining a cable opening through one of the sides of the housing;

a spool mountable within the housing;

a fiber optic cable coiled about a spooling portion of the spool, the fiber optic cable including at least one optical fiber;

a fiber optic connector coupled to the at least one optical fiber of the fiber optic cable;

a fiber optic adapter positioned within the housing, the fiber optic adapter including a first connector port receiving the fiber optic connector and also including an opposite second connector port, the front cover preventing the first and second connector ports of the fiber optic adapter from being accessed from the front of the housing when in the closed position, and the front cover allowing the first and second connector ports of the fiber optic adapter to be accessed from the front of the housing when in the open position;

the fiber optic cable being payable from the spool while the spool is positioned within the housing, wherein the spool rotates relative to the housing about an axis of rotation as the fiber optic cable is paid out from the spool, and wherein the fiber optic connector and the fiber optic adapter rotate in concert with the spool as the fiber optic cable is paid out from the spool; and

a cable routing path for routing a subscriber cable to the second connector port of the fiber optic adapter, the cable routing path extending within the housing from the cable opening to the second connector port of the fiber optic adapter, at least a portion of the cable routing path being located between a rear side of the front cover and a front axial end of the spool when the front cover is in the closed position.

14. The fiber optic enclosure of claim 13, wherein the sides of the housing include first and second opposite sides, wherein the front cover is hingedly coupled to the first side of the housing, wherein the cable opening is located at the second side of the housing, and wherein the spool mounts at a spool mounting location within the housing where the spool is closer to the first side than the second side.

15. The fiber optic enclosure of claim 13, wherein the front cover is coupled to a main portion of the housing by a hinge.

16. The fiber optic enclosure of claim 13, wherein the fiber optic connector is supported on the spool when the fiber optic cable is paid out from the spool.

17. The fiber optic enclosure of claim 13, wherein the fiber optic adapter is coupled to the fiber optic connector.

18. The fiber optic enclosure of claim 13, wherein the fiber optic cable includes a plurality of optical fibers, wherein a plurality of fiber optic connectors terminate the plurality of optical fibers at the first end of the fiber optic cable, wherein the fiber optic connectors rotate in concert with the spool as the fiber optic cable is paid out from the spool, wherein the telecommunications enclosure further includes a plurality of fiber optic adapters, and wherein the plurality of fiber optic connectors are secured within the plurality of fiber optic adapters when the fiber optic cable is paid out from the spool.

19. The fiber optic enclosure of claim 13, further comprising a manual lock configured to lock the spool with varying amounts of the fiber optic cable paid off the spool, the manual lock being lockable without moving the fiber optic adapter relative to the spool.

20. The fiber optic enclosure of claim 19, wherein the spool defines apertures through which a pin can be inserted to lock the spool to the housing.

Abstract

A fiber optic enclosure assembly includes a housing having an interior region and a bearing mount disposed in the interior region of the housing. A cable spool is connectedly engaged with the bearing mount such that the cable spool selectively rotates within the housing. A termination module disposed on the cable spool so that the termination module rotates in unison with the cable spool. A method of paying out a fiber optic cable from a fiber optic enclosure includes rotating a cable spool, which has a subscriber cable coiled around a spooling portion of the cable spool, about an axis of a housing of the fiber optic enclosure until a desired length of subscriber cable is paid out. A termination module is disposed on the cable spool.

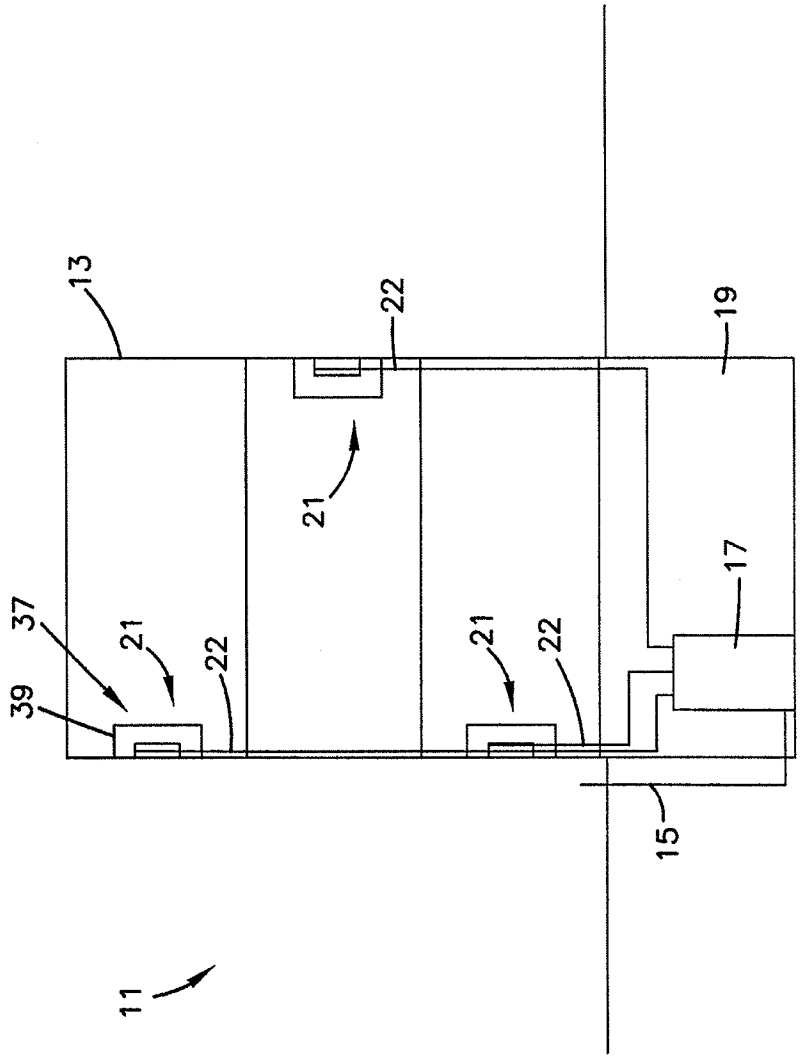


FIG. 1

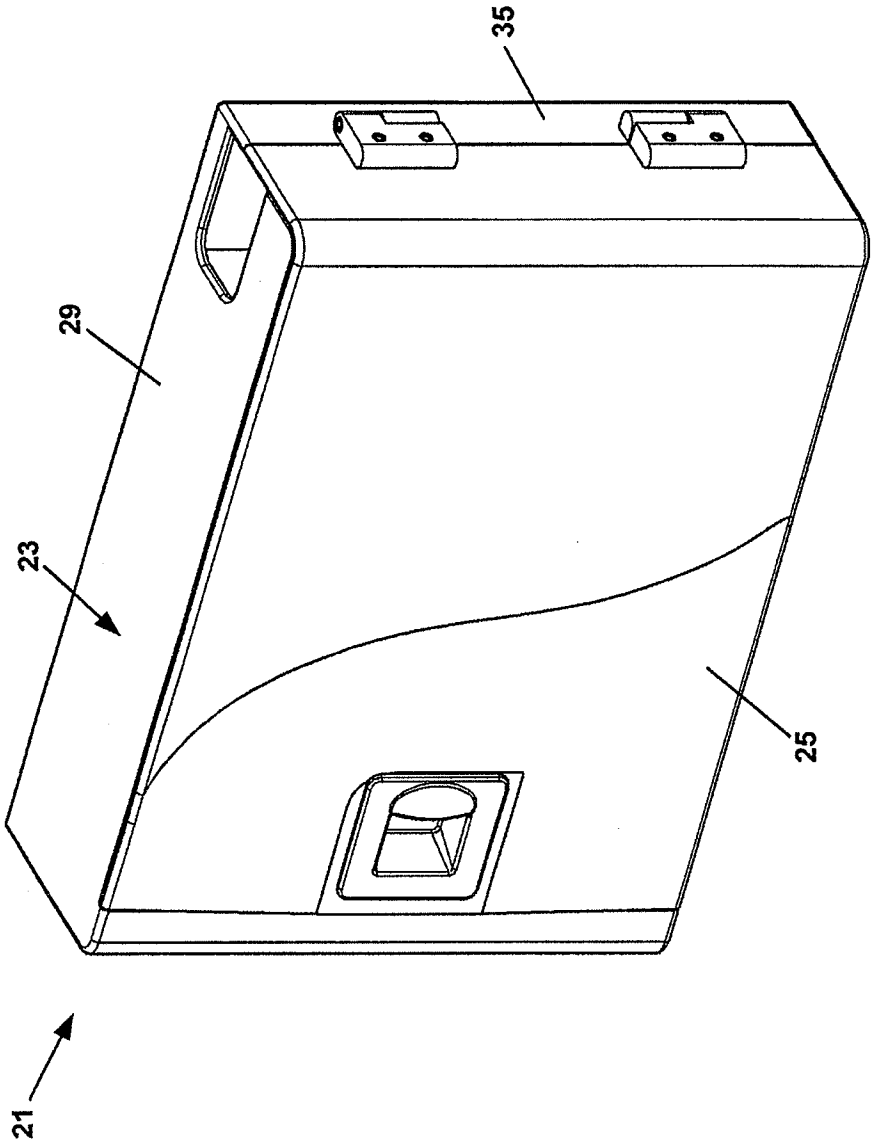


FIG. 2

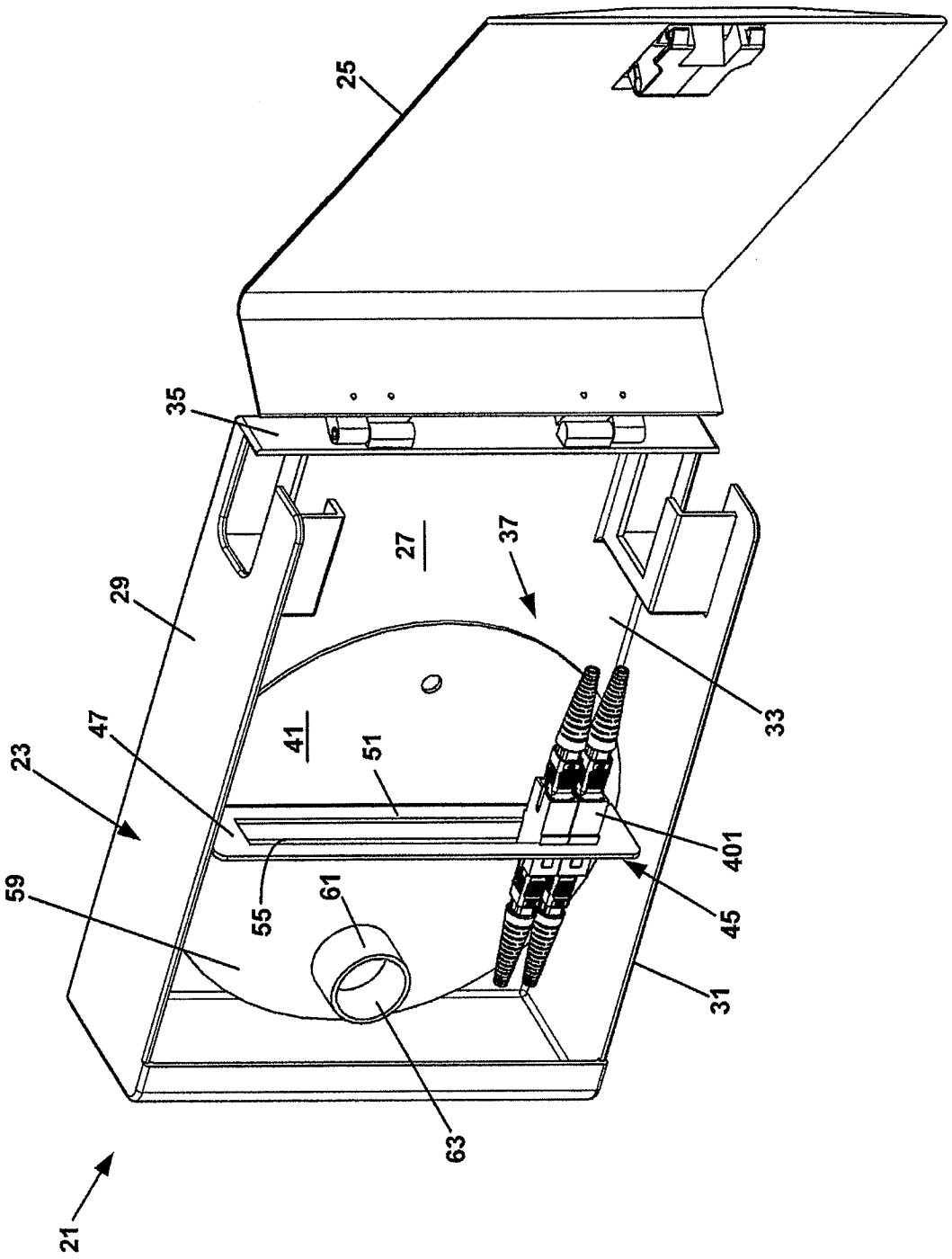


FIG. 3

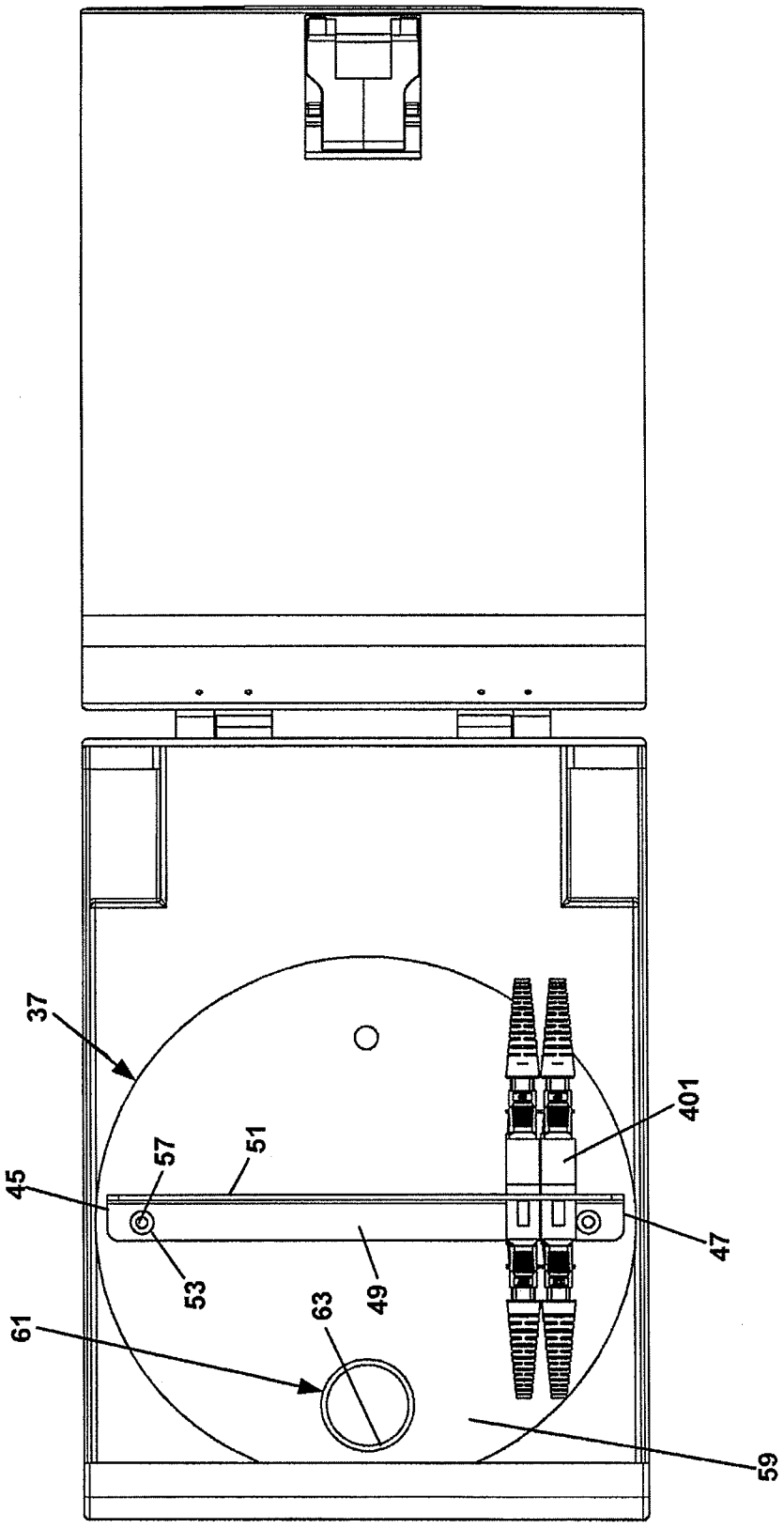


FIG. 4

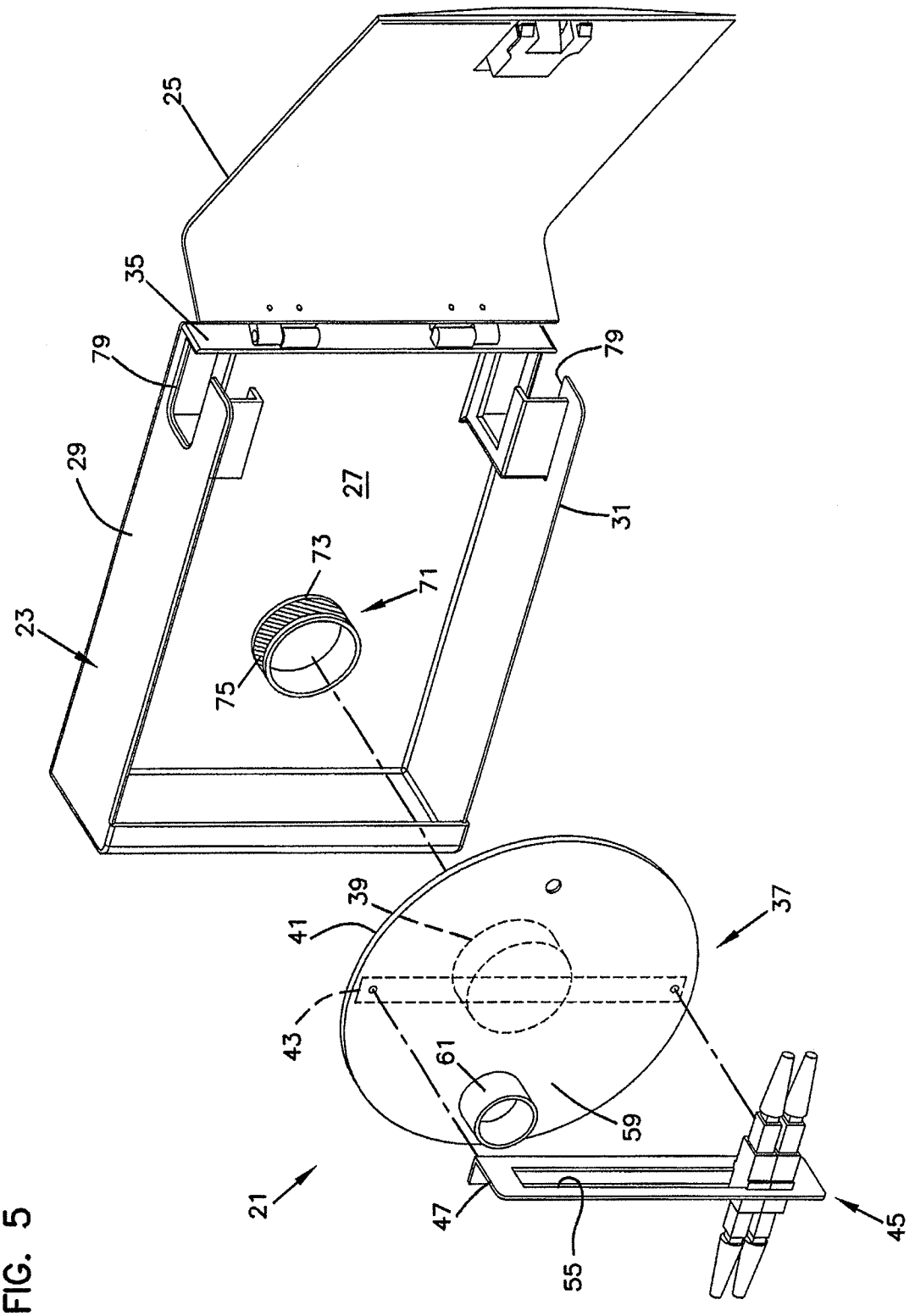


FIG. 5

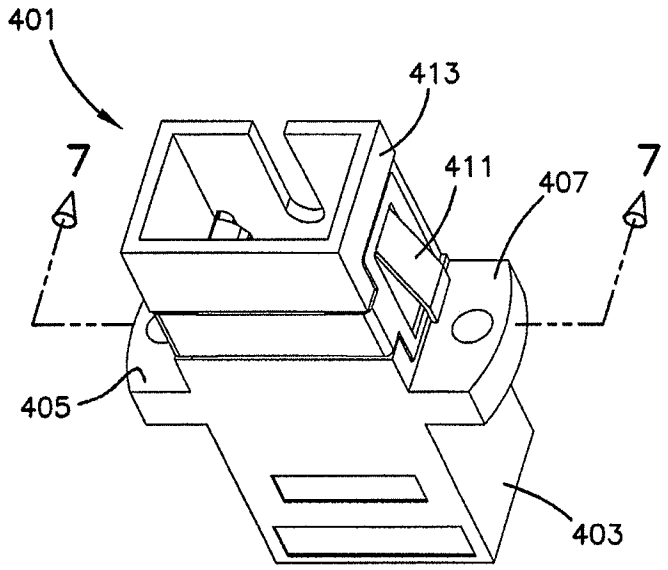


FIG. 6

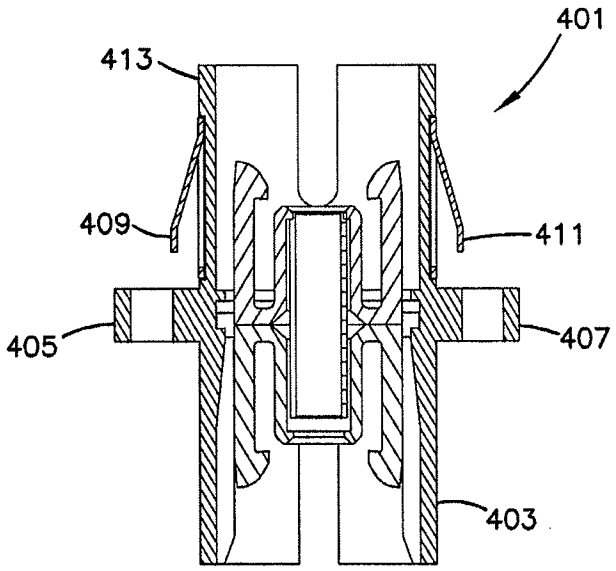


FIG. 7

FIG. 8

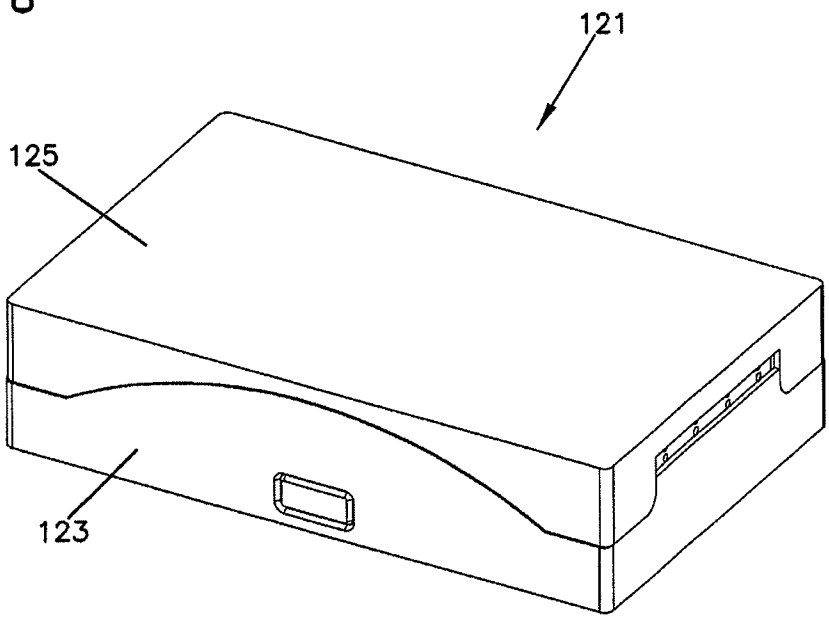


FIG. 9

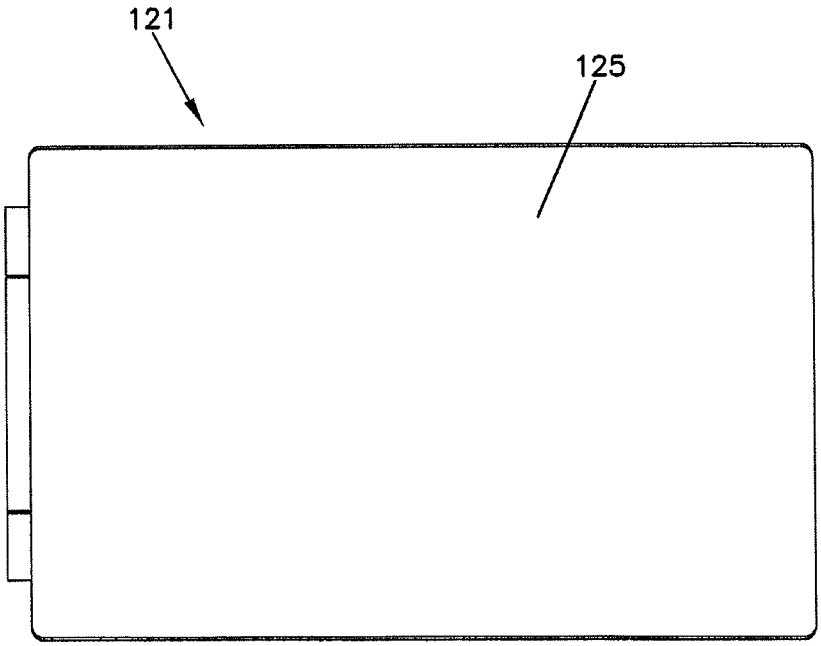


FIG. 10

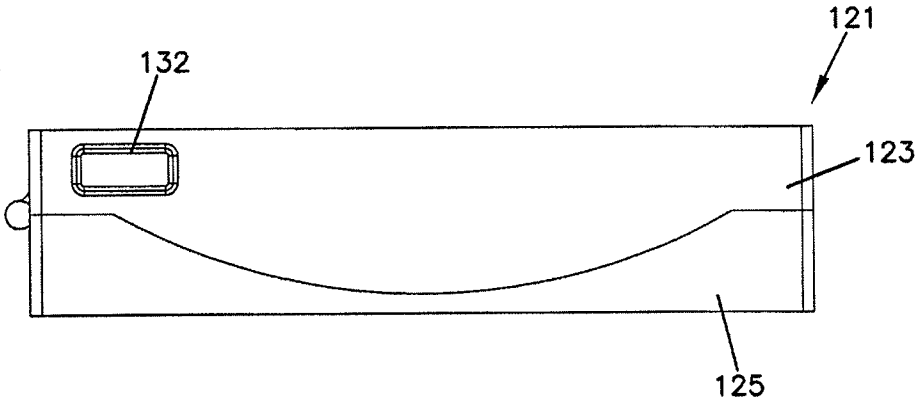


FIG. 11

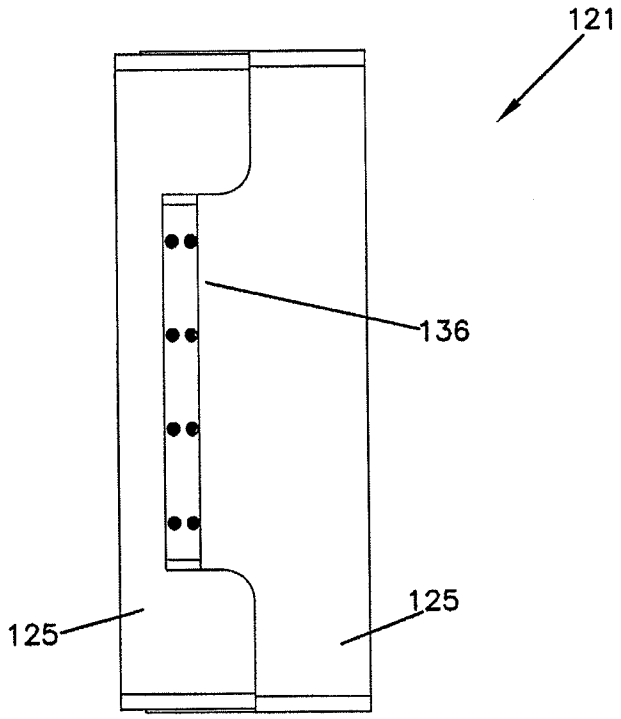


FIG. 12

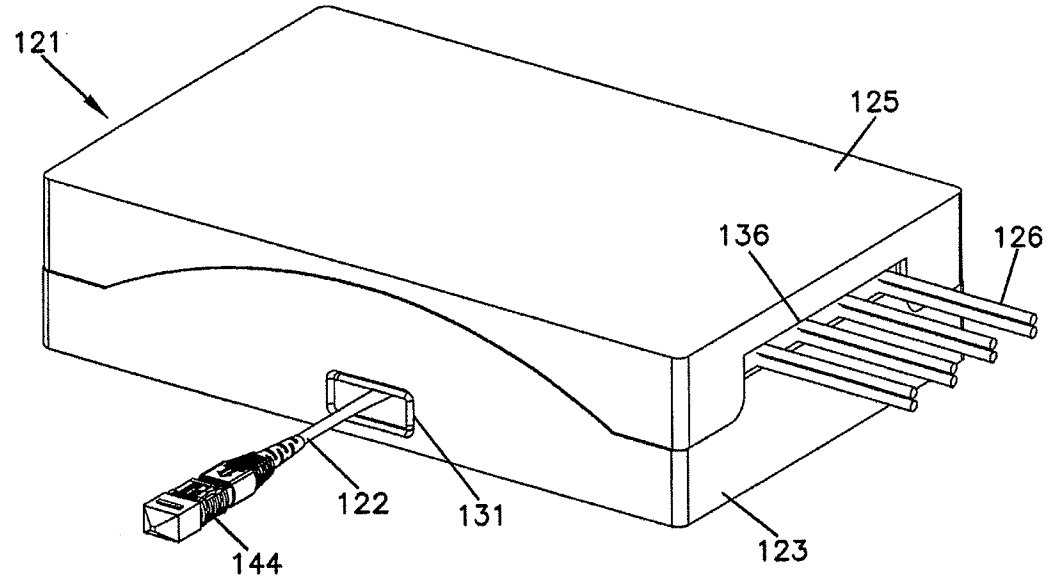
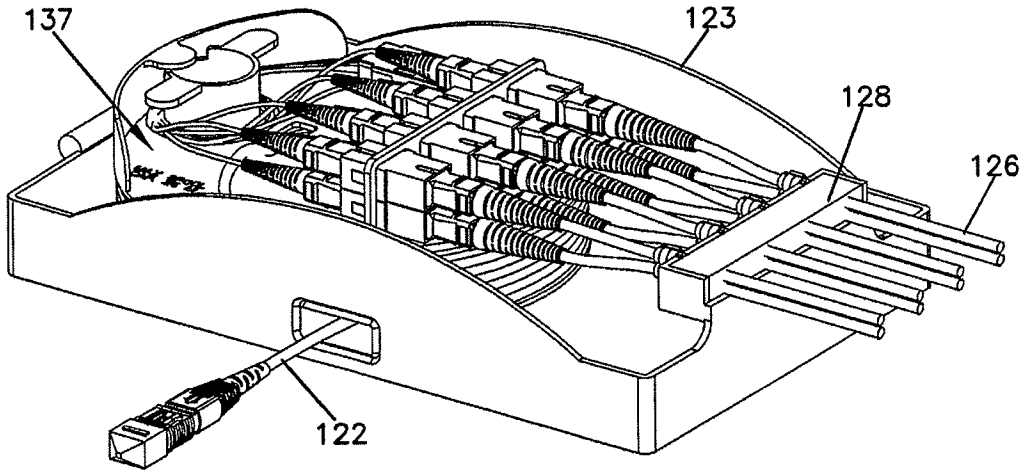


FIG. 13



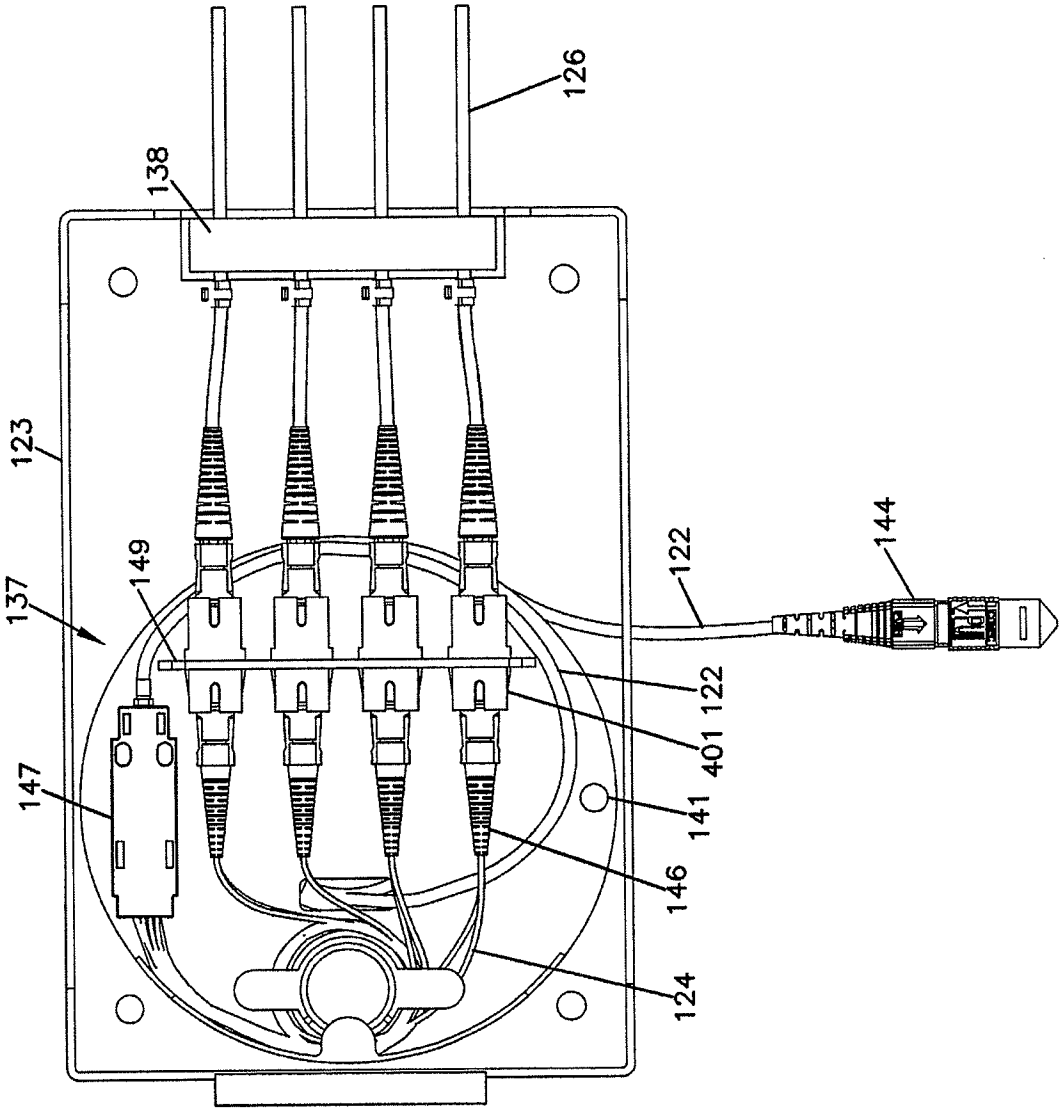


FIG. 14

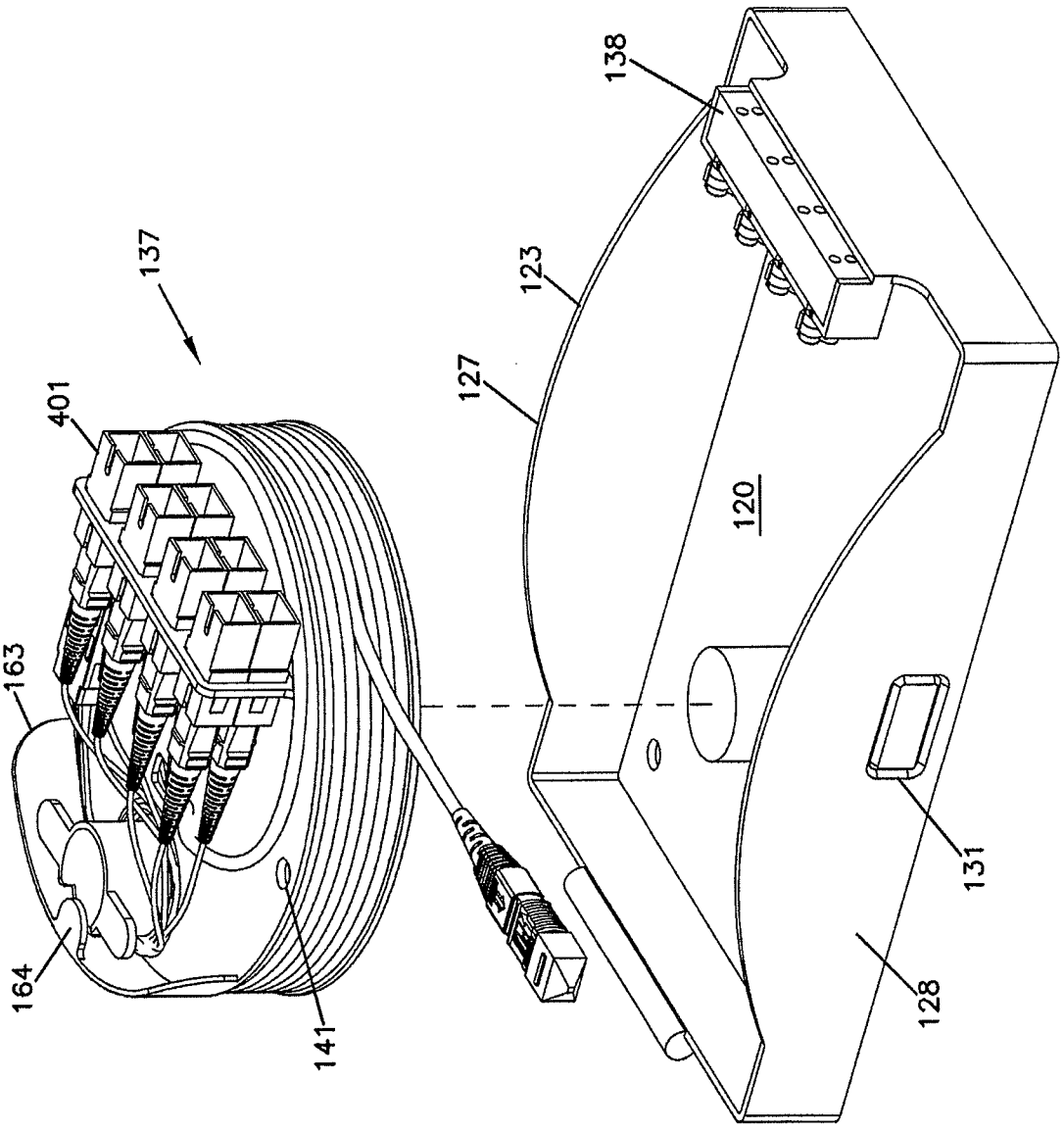


FIG. 15

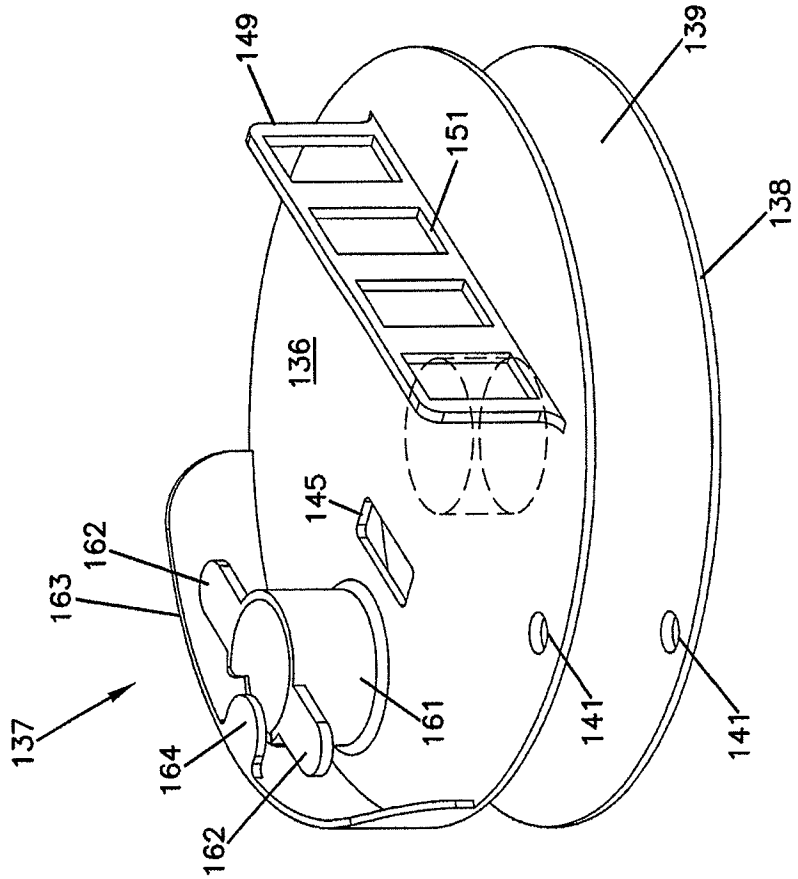


FIG. 16

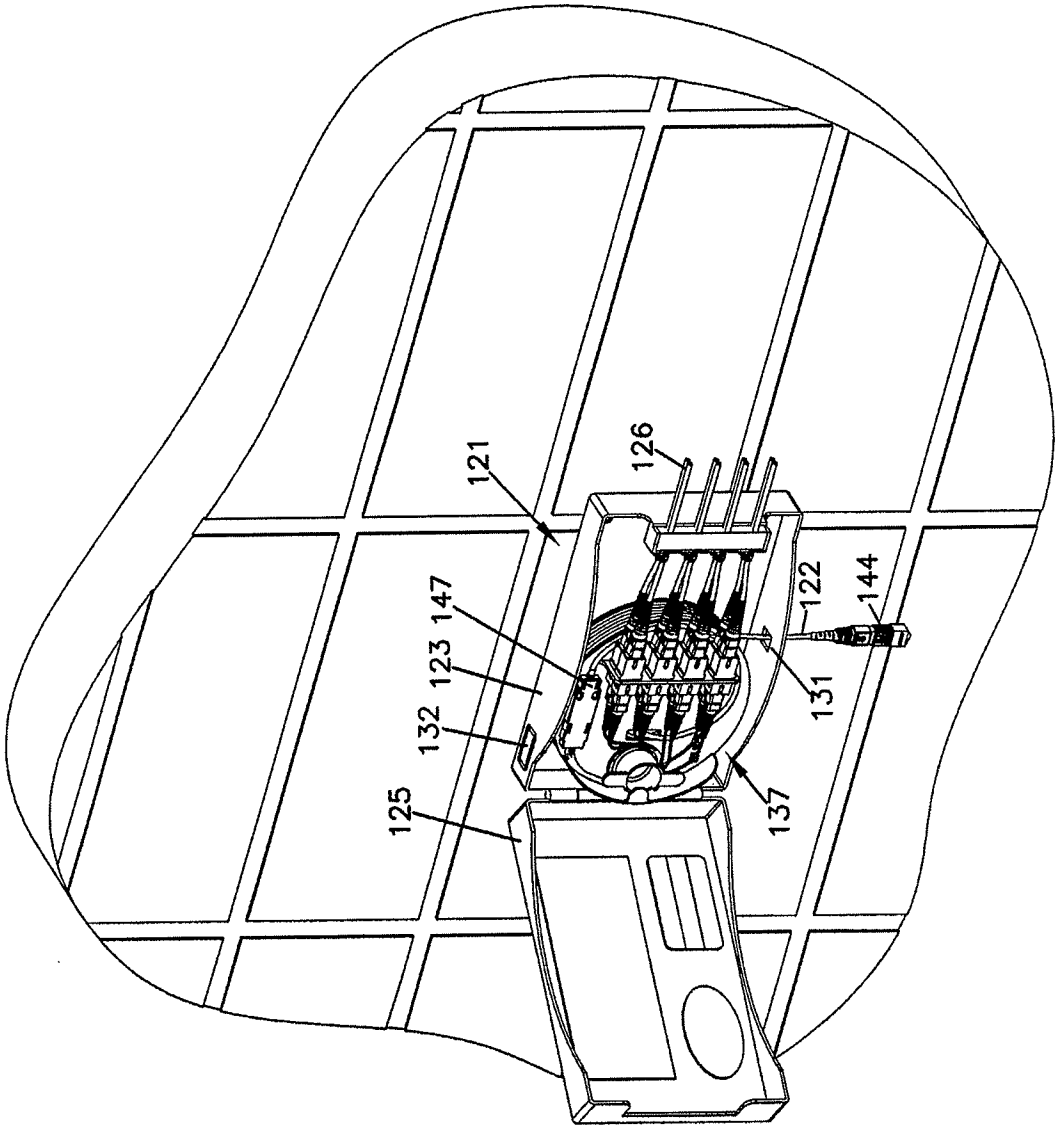
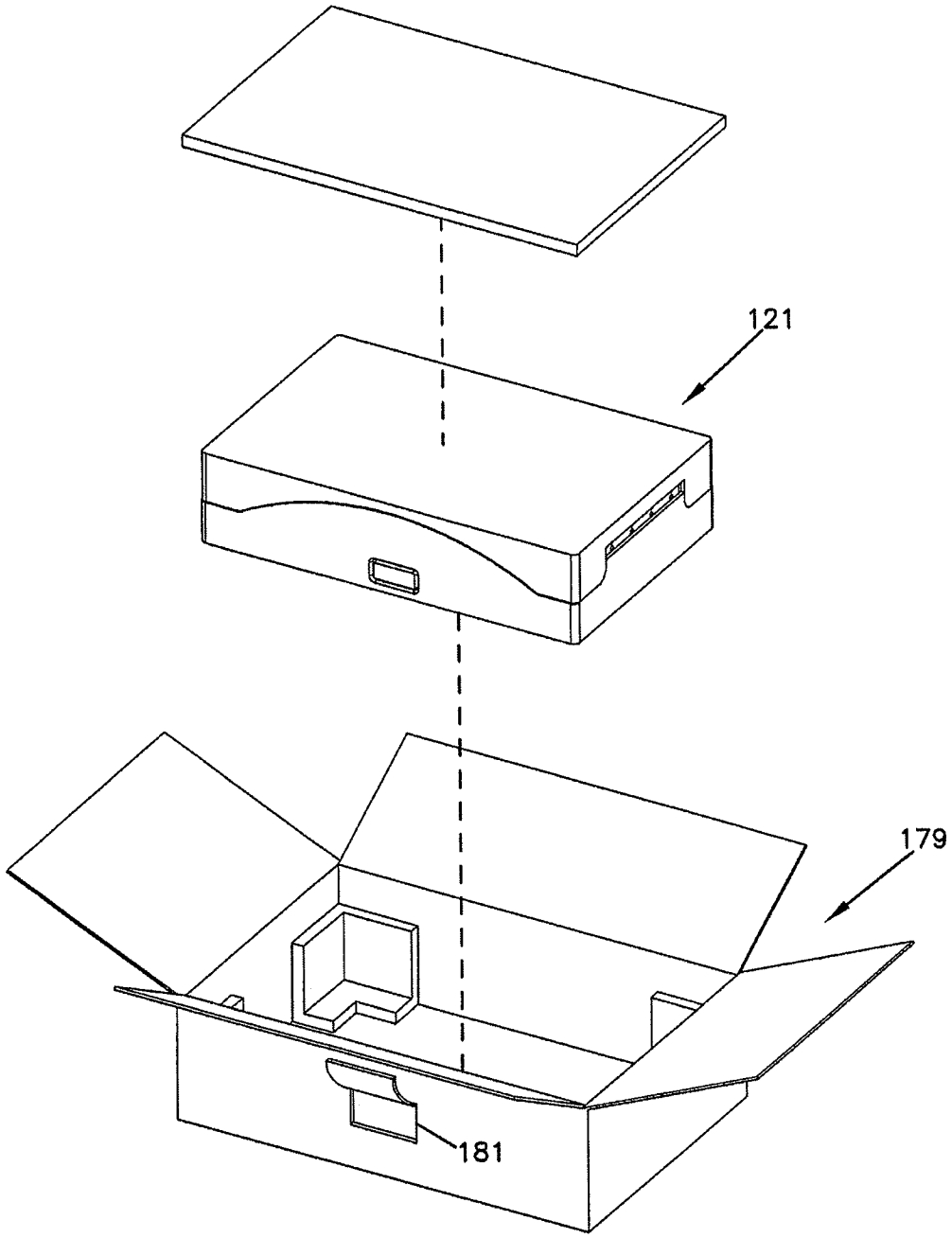


FIG. 17

FIG. 18



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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	Fiber Optic Enclosure with Internal Cable Spool

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 13/924,191 filed on June 21, 2013.

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: Scott C. Kowalczyk Date (Optional): 1-14-2014

Signature: Scott Kowalczyk

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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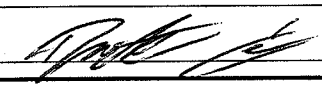
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LEGAL NAME OF INVENTOR

Inventor: Jonathan Walter Coan Date (Optional): 9-19-13

Signature: 

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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.
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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.
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☒ United States application or PCT international application number 13/924,191 filed on June 21, 2013.

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LEGAL NAME OF INVENTOR

Inventor: Jonathan R. Kaml Date (Optional): 01-14-14

Signature: [signature]

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