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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte YU LU, RANDY REAGAN, MICHAEL NOONAN, and
JEFFREY GNIADEK

Appeal 2019-001522
Application 14/957,221
Technology Center 2800

Before MARK NAGUMO, MICHAEL P. COLAIANNI, and
JEFFREY R. SNAY, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1 to 3. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as CommScope Technologies LLC. Appeal Br. 2.

Appellant's invention is directed to fiber optic networks and terminations in fiber optic cables (Spec. 1:14–15; Claim 1).

Claim 1 is representative of the subject matter on appeal:

1. A fiber optic connection device comprising:

a ruggedized multi-fiber connector including a threaded collar, a plurality of tethers;

a breakout structure that provides an optical fiber transition from the multi-fiber connector to the tethers, the break-out structure having a breakout end face defining a breakout surface area, the tethers extending outwardly from the breakout end face, and

first and second groups of ruggedized port-defining structures mounted at end of the tethers, the ruggedized port-defining structures defining ports adapted for receiving single fiber connectors, the first group of ruggedized port-defining structures being spaced a first distance from the breakout end face, the second group of ruggedized port-defining structures being spaced a second distance from the breakout end face, the first and second distances being different distances such that the first and second groups of ruggedized port defining structures are staggered relative to one another, the first and second groups of ruggedized port-defining structures each defining a collective end face area that is larger than the breakout surface area.

Appellant appeals the following rejection:

Claims 1 to 3 are rejected under 35 U.S.C. § 103 as unpatentable over Zimmel (US 2005/0053341 A1, published Mar. 10, 2005) in view of Adams (US 5,937,950, issued Aug. 17, 1999), and Mahony (US 6,522,804 B1, published Feb. 18, 2003).

Appellant argues the claims as a group (Appeal Br. 5 to 9). Therefore, we select claim 1 as representative of the group. 37 CFR §41.37(c)(iv).

FINDINGS OF FACT & ANALYSIS

The Examiner's findings and conclusions regarding the rejection of claim 1 over Zimmel in view of Adams and Mahony are located on pages 4 to 7 of the Final Action.

Appellant argues that the combined teachings of Zimmel, Adams and Mahony would not have suggested a breakout structure that provides an optical fiber transition from a multi-fiber connector, which includes a threaded collar, to a plurality of tethers (Appeal Br. 5). Appellant contends that Zimmel's optical fiber splitter 42 is not a breakout structure and splitter 42 does not provide an optical fiber transition from a multi-fiber connector to a plurality of tethers (Appeal Br. 5). Appellant argues that single optical fiber 136 is not terminated by a multi-fiber connector (Appeal Br. 5–6). Appellant contends that there is no reason provided in Zimmel to add a multi-fiber connector to the device in Zimmel (Appeal Br. 6). Appellant contends that each of Zimmel's ribbon cables 144 is optically coupled to a single input fiber 136 via the splitter 42 (Reply Br. 2). Appellant argues that there is no reason to add a multi-fiber connector to Zimmel between the breakout structure 104 and the splitter 42 and no reason is provided in the record to ruggedize the connection any multi-fiber connection between the splitter 42 and breakout structure 104 (Reply Br. 2). Appellant contends that it would be unnecessary to ruggedize any connection because the components are contained within the housing of module 100 (Reply Br. 2).

Contrary to Appellant's arguments, the Examiner finds that the structure in Zimmel between the splitter 42 and the ribbon cables 144 constitutes a multi-fiber connector (Ans. 5). The Examiner finds that the connection would have been ruggedized to provide protection against

environmental threats, including dirt, moisture, temperature, and vibration (Ans. 4).

Appellant does not direct us to a definition of what constitutes a “multi-fiber connector” in the Specification. The Specification describes an embodiment where a multi-fiber connector constitutes a multi-termination (MT) connector (Spec. 15:20-25). The Specification describes the MT connector as a structure that contains multiple optical fibers 972 that may be connected to fibers in an adjoining structure, such as planar lightwave circuit (PLC) chip (Spec. 15:5-12). Our understanding of the plain meaning of the phrase “multi-fiber connector” includes a structure that connects multiple optical fibers from one structure to another structure or device.

With this claim construction in mind, the Examiner’s finding that the connection between splitter 42 and the ribbon cables 144 constitutes a multi-fiber connector is reasonable. Specifically, Zimmel discloses that splitter 42 separates the optical signals carried by the single fiber 136 into up to thirty-two individual optical signals (§ 42). Zimmel discloses that each ribbon cable 144 includes eight fibers 146 (§ 42). In other words, the multiple fiber optical cable would require a multi-fiber connector to connect the ribbon cable to the optical splitter 42. We are unpersuaded by Appellant’s argument that the connection between the splitter and ribbon cable would not be “ruggedized” because the splitter is located within the module housing 100 (Reply Br. 2). The Examiner reasonably finds that Zimmel teaches that the fibers and other components of the network are exposed to extreme conditions related to temperature, dirt, moisture, and vibration (Ans. 4; Zimmel §§ 2, 27). We find that the preponderance of the evidence favors the Examiner’s determination that it would have been obvious to provide

ruggedized connections including a well-known threaded connection to protect the connection from extremes of the environment. Even if the connection is placed in module 100's housing, the ruggedized connection would provide added protection for the environmental concerns raised by Zimmel.

Appellant argues that Zimmel does not teach port defining cable connectors or first and second groups of ruggedized port-defining structures being spaced different distances from a breakout face (Appeal Br. 7). The Examiner's rejection states that Zimmel does not disclose these features (Final Act. 4). The Examiner finds that Adams discloses forming a first and second staggered array of tethers at different distances from a breakout to permit connection to the cable in either the general vicinity or at remote locations (Final Act. 4-5). The Examiner relies on Mahony to teach that optical drops for a fiber optic network occur at different locations from the outside cable terminals that link central offices to subscriber premises (Final Act. 5). The Examiner finds that Zimmel teaches conventional ruggedized connections include threaded connections and port defining structures (i.e., 119 in Zimmel) (Ans. 4, 5).

Appellant contends that Adams is directed to electrical wires, not optical fibers (Appeal Br. 7). Appellant argues that Adams does not teach or suggest that the first and second groups of connectors 52a to 52d are spaced different distances from a breakout end face of the cable block 48 (Appeal Br. 7). Appellant argues that Adams does not disclose customizing the cable lengths or having two sets of cables with different lengths (Appeal Br. 8). Appellant argues that Mahony does not provide an optical fiber transition from a multi-fiber connector to a plurality of tethers (Appeal Br. 8).

Appellant challenges the Examiner's Official Notice that fibers 124 in Mahony would have been different lengths (i.e., customized for each of the premises hooked up to the fiber optic network) (Appeal Br. 9).

The Examiner finds that Adams teachings regarding a furcated wire network are relevant to an optical fiber system (Ans. 5). The Examiner finds that the wire and optical fiber system each have breakout structures to downstream tether sections to connect to components at varying distances from the breakout structure (Ans. 5). In other words, the Examiner finds that fiber optic system of Adams, Zimmel and Appellant's claimed invention are in the same field of endeavor (i.e., communication networks). Appellant does not respond to this finding of the Examiner (Reply Br. *generally*).

Contrary to Appellant's arguments, the preponderance of the evidence supports the Examiner's analysis on pages 3 to 6 of the Answer. The Examiner finds that Zimmel teaches the subject matter of claim 1, except for the different length tethers (Ans. 2). The Examiner finds that Adams teaches a cascading structure of tethers of different effective lengths (i.e., tethers 24 and upstream tether section 28 and tethers 24 separately terminate at connectors 52) (Ans. 5). The Examiner relies on Mahony to show a practical application where a fiber optic connection device having a breakout structure and a plurality of tethered connectors, as taught by Zimmel, and additionally having cascaded or staggered tether lengths, as taught by Adams, may be used (Ans. 6). In other words, we find that the Examiner supports the Official Notice by citing to Adams that shows tethers having different lengths. The Examiner finds that Zimmel teaches optical fiber connectors 119, which constitute port-defining structures (Ans. 4). Therefore, we determine that the Examiner has established by the

preponderance of the evidence that the combined teachings of Zimmel, Adams and Mahony would have suggested the subject matter of claim 1.

On this record, Appellant has not shown reversible error in the Examiner's § 103 rejection.

CONCLUSION

In summary:

Claims Rejected	Basis	Affirmed	Reversed
1 to 3	§ 103 Zimmel, Adams, Mahony	1 to 3	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). See 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED