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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ERIC Y. CHAN, HENRY B. PANG,
and TUONG KIEN TRUONG

Appeal 2018-008875
Application 13/896,430
Technology Center 2100

Before JOHN A. EVANS, CARL L. SILVERMAN, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

EVANS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ seeks our review under 35 U.S.C. § 134(a) of the Examiner's Final Rejection of all pending claims, i.e., claims 1–4 and 6–20. App. Br. 1–2. We have jurisdiction under 35 U.S.C. § 6(b).

¹ We refer collectively to the inventors as “Appellant.” The Appeal Brief identifies The Boeing Company as the real party in interest. App. Br. 1.

We REVERSE.²

STATEMENT OF THE CASE

The claims relate to a data communications system. *See* Abstract.

INVENTION

Claims 1, 8, and 17 are independent. An understanding of the invention can be derived from a reading of illustrative claim 1, which is reproduced below with some formatting added:

1. A data communication system comprising:
a plastic optical fiber (POF) data bus;
a line replacement unit comprising:
 a terminal controller configured to transmit and receive electrical signals for communication with said POF data bus; and
 a plastic optical fiber serial interface module (POFSIM) coupled directly to said terminal controller and further coupled to said POF data bus,
 wherein said POFSIM comprises
 a mating connector that extends from said POFSIM and comprises a transmit metal hermetic feed-through tube within which a transmit light pipe is

² Rather than reiterate the arguments of Appellant and the Examiner, we refer to the Appeal Brief (filed March 28, 2018, “App. Br.”), the Reply Brief (filed September 13, 2018, “Reply Br.”), the Examiner’s Answer (mailed July 13, 2018, “Ans.”), the Final Action (mailed August 25, 2017, “Final Act.”), and the Specification (filed May 17, 2013, “Spec.”) for their respective details.

mounted, and a receive metal hermetic feed-through tube within which a receive light pipe is mounted,

and wherein said POFSIM is configured to:

transmit digital optical signals based on the electrical signals received from said terminal controller through said transmit light pipe; and

transmit electrical signals, to said terminal controller, based on digital optical signals received from said receive light pipe;

a transmit POF coupled to said mating connector and optically coupled, within said transmit metal hermetic feed-through tube, to said transmit light pipe and further optically coupled to said POF data bus; and

a receive POF coupled to said mating connector and optically coupled, within said receive metal hermetic feed-through tube, to said receive light pipe and further optically coupled to said POF data bus.

References and Rejections

Irwin	US 5,930,428	July 27, 1999
Takahashi	US 2003/0006429 A1	Jan. 9, 2003
Czubarow	US 6,901,203 B1	May 31, 2005
Yu	US 2007/0258722 A1	Nov. 8, 2007
Chan	US 2012/0027415 A1	Feb. 2, 2012
Wilcox	US 2012/0306351 A1	Dec. 6, 2012
Donofrio	US 2012/0305949 A1	Dec. 6, 2012

The Claims stand rejected as follows:

1. Claims 1–4, 6–11, 13, and 17–20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Irwin, Chan, and Czubarow. Final Act. 3–11.
2. Claim 12 stands rejected under 35 U.S.C. § 103 as being unpatentable over Irwin, Chan, Czubarow, and Takahashi. Final Act. 11–12.
3. Claim 14 stands rejected under 35 U.S.C. § 103 as being unpatentable over Irwin, Chan, Czubarow, and Donofrio. Final Act. 12.
4. Claim 15 stands rejected under 35 U.S.C. § 103 as being unpatentable over Irwin, Chan, Czubarow, and Wilcox. Final Act. 12–13.
5. Claim 16 stands rejected under 35 U.S.C. § 103 as being unpatentable over Irwin, Chan, Czubarow, and Yu. Final Act. 13–14.

ANALYSIS

We have reviewed the rejections of Claims 1–4 and 6–20 in light of Appellant’s arguments that the Examiner erred. We consider Appellant’s arguments as they are presented in the Appeal Brief, pages 7–23.

CLAIMS 1–4 AND 6–20: OBVIOUSNESS OVER IRWIN, CHAN, TAKAHASHI, DONOFRIO, WILCOX, AND YU.

Line Replacement Unit.

Independent Claim 1 recites, *inter alia*, “a line replacement unit comprising: a terminal controller configured to transmit and receive electrical signals for communication with said POF data bus; and a plastic optical fiber serial interface module (POFSIM) coupled directly to said

terminal controller and further coupled to said POF data bus.” Independent Claim 8 contains commensurate recitations, i.e., “said POFSIM comprising: a terminal controller interface electronic circuit (TCIEC) configured to be coupled directly to a terminal controller and to receive electrical signals from the terminal controller.” Independent Claim 17 also contains commensurate recitations, i.e., “receiving, at a plastic optical fiber serial interface module (POFSIM) mounted inside a line replacement unit, an electrical signal from the terminal controller.”

The Examiner finds Irwin teaches a data communication system comprising a data bus, i.e., fibers 140 and a line replacement unit, LRU 110. Final Act. 3. The Examiner further finds LRU 110 comprises a terminal controller, specifically, LRU 110, configured to transmit and receive electric signals for communication with the data bus. *Id.*

As argued by Appellant, the Examiner equates Irwin’s device 110 as both the claimed Line Replacement Unit (LRU) and the claimed terminal controller. App. Br. 8 (“[t]he Final Office Action goes further and construes LRU (310) as both the claimed LRU and the claimed terminal controller, which are ‘directly coupled’ to optoelectronic devices (210).”). Appellant argues: “[s]uch a construction ignores the structure recited in Claim 1, namely, an LRU that comprises a terminal controller and a POFSIM coupled directly to the terminal controller.” *Id.*

The Answer fails to engage Appellant’s argument that the Examiner has cited a single device in the Irwin reference as corresponding to two devices cited in the claims. *See* Ans. 4–6.

The “Federal Circuit has held that ‘[w]here a claim lists elements separately, the clear implication of the claim language’ is that those elements are ‘distinct component[s]’ of the patented invention.” *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (quoting *Gaus v. Conair Corp.*, 363 F.3d 1284, 1288 (Fed. Cir. 2004)); see *Engel Indus., Inc. v. Lockformer Co.*, 96 F.3d 1398, 1404–05 (Fed.Cir.1996) (concluding that where a claim provides for two separate elements, a “second portion” and a “return portion,” these two elements “logically cannot be one and the same”). There is nothing in the claims to suggest that the claimed LRU and the claimed terminal controller can be the same structure. See *CAE Screenplates, Inc. v. Heinrich Fiedler GmbH & Co.*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) (“In the absence of any evidence to the contrary, we must presume that the use of . . . different terms in the claims connotes different meanings.”).

We find in view of the Examiner’s mapping, the prior art fails to teach a terminal controller as distinct from an LRU.

Terminal Controller.

Claim 1 recites, *inter alia*, “a terminal controller configured to transmit and receive electrical signals for communication with said POF data bus.” To teach this limitation the Examiner finds “[o]ptoelectronic devices 210 [a sub-component of LRU 110] can, for example, convert electrical signals from LRU 110 into optical signals for transmission over fibers 140.” Final Act. 3. In light of the Specification, the Examiner finds the claimed

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terminal controller is “any device that transmits and receive [*sic*] electric signals is in light of the Specification.” Ans. 4 (citing Spec. ¶ 3).

Appellant contends the broadest reasonable interpretation of the claims must be taken in terms of the Specification disclosure. App. Br. 8 (citing Spec. ¶¶ 3, 33); Reply Br. 1.

The Examiner finds the argued features of the terminal controller are not given patentable weight as they are not recited in the claims. *Id.*

The Examiner’s citation to Paragraph 3 relates to the prior-art glass optical system wherein a prior-art terminal controller communicates with a Fiber Optic Serial Interface Module (FOSIM), not the claimed POFSIM (Plastic Optic Serial Interface Module (POFSIM)). Spec. ¶ 3 (“One existing solution for implementing an optical fiber data bus incorporates glass optical fibers (GOFs). This system utilizes 850 nm wavelength transmitters and receivers that are packaged individually in a pair, called a Fiber Optic Serial Interface Module (FOSIM).”).

Appellant discloses: “[t]he POFSIM includes a terminal controller interface electronic circuit (TCIEC) configured to receive electrical signals from a terminal controller, an optical source coupled to the TCIEC and configured to transmit digital optical signals to a data bus based on the received electrical signals.” Spec. ¶ 6. Appellant further discloses: “POFSIM 400 includes a terminal controller interface electronic circuit (TCIEC) 412 that interfaces with a terminal controller, such as terminal controller 306 TCIEC 412 is coupled to at least a portion of a plurality of pins 414. The TXO, TXE, RICK, TXHB, PWRS, and VCC pins are

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inputs from the terminal controller for supplying power to POFSIM 400 and sending Manchester bi-phase electrical signals to POFSIM 400. More specifically, the TXO pin receives bi-phase Manchester encoded data in an ARINC629 format from the terminal controller.” Spec. ¶ 33 (cited by the Examiner).

In view of the Specification, the Examiner’s finding that the claimed terminal controller is “any device that transmits and receive [*sic*] electric signals is in light of the Specification.” (Ans. 4) is unreasonably broad.

Because we find the cited art fails to teach at least one claim limitation, we decline to sustain the rejections of claims 1–4 and 6–20 under 35 U.S.C. § 103.

DECISION

The rejections of claims 1–4 and 6–20 under 35 U.S.C. § 103 are REVERSED.

REVERSED