

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WILLIAM PAUL ROGERS

Appeal No. 2002-1210
Application No. 09/483,018¹

ON BRIEF

Before HAIRSTON, KRASS, and SAADAT, Administrative Patent Judges.
SAADAT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the Examiner's final rejection of claims 1-22, which are all of the claims pending in this application.

We reverse.

BACKGROUND

Appellant's invention is directed to an interconnection topology for large array of high-speed modules arranged on both sides of a midplane. The modules on one side are oriented

¹ Application for patent filed January 13, 2000, which claims the filing priority benefit under 35 U.S.C. § 119 of Provisional Application No. 60/126,142, filed March 25, 1999.

horizontally whereas the modules on the other side are oriented vertically (specification, page 5).

Representative independent claim 1 is reproduced below:

1. A chassis for holding modules comprising:

a set of first modules oriented horizontally in the chassis,

a set of second modules oriented vertically in the chassis,

a midplane oriented orthogonally to the sets of first and second modules, including first and second sides and connector pins extending from the first side through to the second side,

each of the first modules including a first connector for mating with the connector pins extending from the first side,

each of the second modules including a second connector for mating with the connector pins extending from the second side,
and

wherein input and output functions comprising balanced differential drivers and receivers which permit balanced differential signaling are present in one of said first or second modules, and wherein switching functions comprising balanced differential drivers and receivers which permit balanced differential signaling are present in the other of said first or second modules and all controlled impedance signal traces are on said first and second modules.

The Examiner relies on the following references in rejecting the claims:

Hughes	4,472,765	Sep. 18, 1984
Petit et al. (Petit)	4,703,394	Oct. 27, 1987
Dara	4,876,630	Oct. 24, 1989
Takahashi et al. (Takahashi)	5,640,387	Jun. 17, 1997
Lyon et al. (Lyon)	5,675,580	Oct. 7, 1997
Fukuda	5,870,528	Feb. 9, 1999

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Appellant's admitted prior art, Figure 1.

Claims 1-4, 6-11, 13, 14 and 18-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Petit, Hughes and Lyon.

Claims 1-4, 6-11, 13, 14 and 18-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Petit, Hughes and Lyon and further in view of Fukuda.

Claims 15 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Petit, Hughes and Lyon alone or with Fukuda and further in view of the admitted prior art.

Claims 5 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Petit, Hughes and Lyon alone or with Fukuda and further in view of Dara.

Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Petit, Hughes and Lyon alone or with Fukuda and further in view of Takahashi.

We make reference to the answer (Paper No. 15, mailed September 27, 2001) for the Examiner's reasoning, and to the appeal brief (Paper No. 12, filed July 5, 2001) for Appellant's arguments thereagainst.

OPINION

With respect to the rejection of claims 1-4, 6-11, 13, 14 and 18-22, Appellant argues that Lyon, by using equalizer 96 in connection with balanced drivers, teaches away from using balanced differential drivers and receivers in a chassis environment (brief, page 7). Appellant further points out that Lyon's use of an equalizer is indicative of a large system which requires cabling over varying distances between shelves or equipment racks (id.). Additionally, Appellant argues that the teachings of Hughes related to balanced audio signals fails to provide adequate motivation to use the equalized, balanced differential signal of the large system of Lyon in combination with Petit, Hughes and Fukuda (brief, page 8).

In response to Appellant's arguments, the Examiner asserts that neither the claims exclude the use of a equalizer nor Lyon's use of an equalizer in a multi-shelf/rack system teaches away from the combination (answer, page 7). The Examiner reasons that since Petit also mentions multiple shelves and racks (col. 10, lines 60-68), the use of an equalizer does not teach away from the combination (id.). Additionally, the Examiner relies on the desirability of having balanced audio signals in Hughes (col. 4, lines 14-17) and the high speed signaling in Petit (col. 1, lines

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15-18) and in Lyon (col. 1, lines 38-56) in support of the combination and states that it is the same purpose that is outlined by Appellant (specification, page 8, lines 9-20).

The initial burden of establishing reasons for unpatentability rests on the Examiner. In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). The Examiner must produce a factual basis supported by teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration, consistent with the holding in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966). This evidence is required in order to establish a prima facie case. In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984); In re Cofer, 354 F.2d 664, 668, 148 USPQ 268, 271-72 (CCPA 1966). However, "the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion." In re Lee, 277 F.3d 1338, 1344, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002).

Our review of Lyon confirms that the reference relates to a single cross-connect system for processing all signals embedded within a multi-layer signal structure (col. 2, lines 2-4). As depicted in Figure 8A, after completing a crosspoint switch

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function, Matrix Transport Format (MTF) signals are converted to differential signals through balanced drivers which are then routed to an equalizer 96 for transmission to a wideband matrix (col. 10, lines 47-59). Therefore, as pointed out by Appellant, the system of Lyon operates on a larger scale having multiple racks or shelves which requires the use of an equalizer in connection with the balanced drivers.

Petit, similarly, relates to a method of interconnecting orthogonal boards without any need for wiring between the boards (col. 2, lines 8-16). As depicted in Figure 1, Petit provides for first connectors 3 and second connectors 4 on facing edges of the horizontal and vertical boards positioned on both sides of mother board 7. The boards are connected to each other through multiway connectors 5 and 6 mounted on the mother board (col. 3, lines 49-65). However, Petit directly connects the boards through only one level of connectors without any need for additional wiring, different from Lyon which includes a plural-stage system.

Hughes, on the other hand, is concerned with electrical connection between orthogonally arranged circuit-carrying cards arranged on two sides of a mother board through conductive pins (col. 1, lines 39-52). Although Hughes mentions that such

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connection permits dual paths for switching balanced audio signals or bidirectional streams of data (col. 4, lines 14-17), we disagree with the Examiner that there is any suggestion for its combination with Lyon and Petit.

It is well settled that it is the teachings of the prior art taken as a whole which must provide the motivation or suggestion to combine the references. Fritch, 972 F.2d at 1266, 23 USPQ2d at 1783-84 (Fed. Cir. 1992) and Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988). As the court in Uniroyal, 837 F.2d at 1051, 5 USPQ2d at 1438 stated, "it is impermissible to use the claims as a frame and the prior art references as a mosaic to piece together a facsimile of the claimed invention."

Absent Appellant's own disclosure, we can think of no reason why one of ordinary skill in this art would have been motivated to combine the teachings of Petit and Hughes with Lyon as the examiner has proposed. Here, the teachings of Lyon are directed to a larger scale switching system which is different from that of Petit and Hughes and, in our view, the examiner has impermissibly relied upon the appellant's own disclosure in arriving at a conclusion of obviousness. For example, what the Examiner relies on as the motivation to combine, in col. 2, lines

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8-16 of Petit (answer, page 9), actually relates to the desirability of direct connection without any wiring between the boards. Whereas, as discussed above, Lyon includes a multi-layer signal structure which requires that the terminating signals be routed to matrix crosspoint switches which are later converted to differential signals and further routed to an equalizer for balancing (col. 10, lines 47-59). Therefore, we find no reason or suggestion for combining various teachings from these references, as set forth by the examiner, to arrive at the appellant's claimed invention other than hindsight knowledge derived from Appellant's own disclosure. As noted above, the use of such hindsight knowledge to support an obviousness rejection under 35 U.S.C. § 103 is, of course, impermissible.

Thus, there is no suggestion or motivation for combining the references in the manner proposed by the Examiner. Therefore, as the Examiner has failed to set forth a prima facie case of obviousness, the 35 U.S.C. § 103 rejection of independent claims 1, 7 and 18, nor of claims 2-4, 6, 8-11, 13, 14 and 19-22 dependent thereon, over Petit, Hughes and Lyon cannot be sustained.

With respect to the 35 U.S.C. § 103(a) rejection of claims 1-4, 6-11, 13, 14 and 18-22 over Petit, Hughes and Lyon and

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further in view of Fukuda, we note that Fukuda is relied on for disclosing the details of the connectors disclosed in Petit. The Examiner has not pointed to any teachings in Fukuda, nor do we find any, that would have overcome the deficiencies of the combination of the references discussed above. Therefore the 35 U.S.C. § 103 rejection of claims 1-4, 6-11, 13, 14 and 18-22 over Petit, Hughes, Lyon and Fukuda is not sustained.

We note that the Examiner, in addition to Petit, Hughes and Lyon alone or with Fukuda, further relies on the admitted prior art for rejecting claims 15 and 16, on Dara for rejecting claims 5 and 12 and on Takahashi for rejecting claim 17. These prior art references neither include any teachings that read on the claimed features nor provide any suggestion for combining the references to overcome the deficiencies of the combination as discussed above. Accordingly, we do not sustain any of the 35 U.S.C. § 103 rejections of claims 5, 12, 15, 16 and 17.

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CONCLUSION

In view of the foregoing, the decision of the Examiner rejecting claims 1-22 under 35 U.S.C. § 103 is reversed.

REVERSED

KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
ERROL A. KRASS)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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)	
MAHSHID D. SAADAT)	
Administrative Patent Judge)	

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Baker & Hostetler LLP
Washington Square, Suite 1100
1050 Connecticut avenue, NW
Washington, DC 20036