

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN J. WESTERMAN

Appeal No. 2003-2072
Application No. 09/735,439

ON BRIEF

Before KRASS, FLEMING, and GROSS, ***Administrative Patent Judges***.
FLEMING, ***Administrative Patent Judge***.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 and 4. Claims 2, 3 and 5 have been allowed.

Invention

The invention relates to a transfer switch that is adapted for use in network analyzers. In a network analyzer, a transfer switch connects the test signal source to one port of the device under test and terminates the remaining ports in a low-reflection load. The ideal transfer switch has a low, repeatable loss in

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the test signal path. In addition, the transfer switch must provide a high degree of isolation in all of the terminated paths. See page 1 of Appellant's specification. Figure 1 is a schematic drawing of a two port transfer switch 10 according to Appellant's invention. See page 2 of Appellant's specification. As shown in Figure 1, switch 10 utilizes a routing switch 11 and two port termination switches 19 and 29. Routing switch 11 receives test signal input and provides a first and second output. Routing switch 11 is constructed from two coupled dividers shown as 15 and 25. Each divider includes two switches shown at 16 and 17 for divider 15 and 26 and 27 for divider 25. The switches are coupled such that switches 16 and 26 are in opposite states with respect to one another, and switches 17 and 27 are also in opposite states with respect to one another. Thus, one of the outputs is connected to the input and the other output is connected to ground. See page 3 of Appellant's specification. Figure 1 further shows that each of the output terminals of the routing switch 11 is connected to a port terminal switch 19 and 29. Port terminal switches 19 and 29 each include a common-base transistor 13 and 23 respectively. See page 3 of Appellant's specification.

In operation, when switch 17 is closed and switch 16 is open, output of routing switch 11 at node 18 is biased at a negative potential and common-based transistor 13 in port terminal switch 19 is in a conducting state. The input signal hence, is routed to port 1. In this configuration, divider 25 has switch 26 closed and switch 27 open. Hence, the signal is blocked by switch 27. In addition, the output of routing switch 11 at node 28 is shorted to ground, and hence, the common-base transistor 23 in port terminal switch 29 is non-conducting, which provides additional isolation. See page 3 of Appellant's specification.

Claim 1 is representative of Appellant's invention and is reproduced as follows:

1. A transfer switch having a test signal input and first and second ports, said transfer switch comprising:

a first routing switch having a routing switch input for receiving said test signal input and first and second outputs, each output being connected to said routing switch input by a first switching element and each output being connected to ground by a second switching element; and

first and second port termination switches connected to said first and second outputs, respectively, of said first routing switch, each termination switch comprising a common-base transistor.

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References

Hamano et al. (Hamano)	5,293,087	Mar. 8, 1994
Miyata	JP 06-085641	Mar. 25, 1994

Rejection at Issue

Claims 1 and 4 stand rejected under 35 U.S.C. § 103 as being unpatentable over Miyata and Hamano.

Throughout our opinion, we will make reference to the briefs¹ and the answer for the respective details thereof.

OPINION

With full consideration being given to the subject matter on appeal, the Examiner's rejection and arguments of Appellant and the Examiner, for the reasons stated *infra*, we will sustain the Examiner's rejection of claims 1 and 4 under 35 U.S.C. § 103.

At the outset, we note that Appellant states on page 3 of the brief that claims can be considered as a single group. Furthermore, we note that Appellant has argued the claims as a single group in the brief and reply brief.

¹ On December 9, 2002, Appellant filed a second supplemental brief in response to the reopening of prosecution. We will simply refer to the second supplemental brief as simply the brief. Appellant filed a reply brief on April 24, 2003. The Examiner mailed out an Office communication on May 8, 2003, stating that the reply brief has been entered into the record.

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37 CFR § 1.192(c)(7) (July 1, 2001) **as amended at** 62 Fed. Reg. 53196 (October 10, 1997), which was controlling at the time of Appellants filing the brief, states:

For each ground of rejection which [A]ppellants contest and which applies to a group of two or more claims, the Board shall select a single claims from the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone unless a statement is included that the claims of the group do not stand or fall together and, in the argument under paragraph (c)(8) of this section, Appellants explains why the claims of the group are believed to be separately patentable. Merely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable.

We will, thereby, consider Appellant's claims as standing or falling together and we will treat claim 1 as a representative claim of that group. **See In re McDaniel**, 293 F.3d 1379, 1383, 63 USPQ2d 1462, 1465 (Fed. Cir. 2002) ("If the brief fails to meet either requirement [of 37 CFR § 1.192(c)(7)], the Board is free to select a single claim from each group of claims subject to a common ground of rejection as representative of all claims in that group and to decide the appeal of that rejection based solely on the selected representative claim.") **See also, In re Watts**, 354 F.3d 1362, 1368, 69 USPQ2d 1453, 1457 (Fed. Cir. 2004).

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In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of establishing a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). *See also In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). The Examiner can satisfy this burden by showing that some objective teaching in the prior art or knowledge generally available to one of ordinary skill in the art suggests the claimed subject matter. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the Appellants. *Oetiker*, 977 F.2d at 1445, 24 USPQ2d at 1444. *See also Piasecki*, 745 F.2d at 1472, 223 USPQ at 788.

An obviousness analysis commences with a review and consideration of all the pertinent evidence and arguments. "In reviewing the [E]xaminer's decision on appeal, the Board must necessarily weigh all of the evidence and argument." *Oetiker*, 977 F.2d at 1445, 24 USPQ2d at 1444. "[T]he 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*,

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277 F.3d 1338, 1344, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002). With these principles in mind, we commence review of the pertinent evidence and arguments of Appellant and Examiner.

Appellant argues that the Examiner has not pointed to any teachings in Miyata or Hamano to configure a common-based transistor to act as a switch. See page 3 of the brief and reply brief.

The Examiner has shown that Miyata's Figure 1 shows a transfer switch having a test signal input and first and second ports, the transfer switch comprising a first routing switch having a routing switch input for receiving said test signal input and said first and second outputs, each output being connected to the routing switch by a first switching element and each output being connected to ground by a second switching element as recited in Appellant's claim 1. See page 3 of the Examiner's answer. The Examiner agrees that Miyata does not teach first and second port termination switches connected to said first and second outputs, respectively, of said first routing switch, each termination switch comprising a common-base transistor as recited in Appellant's claim 1. However, the Examiner points to Hamano's Figure 10 which shows a low-pass filter for filtering very high frequency. The Examiner points

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out that Hamano's low-pass filter has a common-base transistor. The Examiner proposes to modify Miyata's Figure 1 by providing Hamano's low-pass filter to be connected to each output of Miyata's first routing switch. The Examiner points out that in this way the combination would provide first and second port termination switches connected to the first and second outputs respectively, of said first routing switch, each termination switch comprising a common-base transistor as recited in Appellant's claim 1.

The question before us is whether Hamano's first and second low-pass filters used in the Examiner's proposed combination would read on Appellant's claimed first and second port termination switches. As pointed out by our reviewing court, we must first determine the scope of the claim. "[T]he name of the game is the claim." *In re Hiniker Co.*, 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998). "In examining a patent claim, the PTO must apply the broadest reasonable meaning to the claim language, taking into account any definitions presented in the specification." *In re Bass*, 314 F.3d 575, 577, 65 USPQ2d 1156, 1158 (Fed. Cir. 2002) citing *In re Yamamoto*, 740 F.2d 1569, 1571, 222 USPQ 934, 936 (Fed. Cir. 1984). Words in a claim are to be given their ordinary and accustomed meanings unless the

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inventor chooses to be his own lexicographer in the specification. *In re Bass*, 314 F.3d at 577, 65 USPQ2d at 1158, citing *Lantech, Inc. v. Keip Mach. Co.*, 32 F.3d 542, 547, 31 USPQ2d 1666, 1670 (Fed. Cir. 1994).

We note that Appellant has not argued that the term "switches" as recited in claim 1 has a definition other than the ordinary and accustomed meaning. Furthermore, we note that the ordinary and accustomed meaning of switches does not preclude functioning in the frequency domain as well as the time domain. Furthermore, we note that a low-pass filter when viewed in the frequency domain is a switch. Therefore, we find that the Examiner's proposed combination of having a first and second Hamano's low-pass filter connected to the first and second outputs of the first routing switch reads on all the limitations recited in Appellant's claim 1.

Even if the claim was rewritten to preclude this interpretation, we further find that the Hamano's low-pass filters would act as switches in the time domain as well. Turning to Miyata's Figure 1, when transistor 6 is open (i.e., non-conducting) then transistor 10 is closed (i.e., conducting). The result is that output terminal 2 is connected to ground 11 through conducting transistor 7. When Hamano's low-pass filter

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is connected to terminal 2 under this condition, Hamano's common-base transistor is connected to ground and is non-conducting, hence, acting as a switch. Therefore, we find that the combination proposed by the Examiner would provide a switching function in the time domain as well.

Appellant further argues that the Examiner has not pointed to any suggestion in Miyata that any form of output filtering is needed. Appellant points out that Miyata teaches a microwave switching circuit. Appellant argues that the proposed combination of using Hamano's low-pass filter would block the signals of interest. See page 4 of Appellant's brief.

When determining obviousness, "[t]he factual inquiry whether to combine references must be thorough and searching." ***In re Lee***, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002), ***citing McGinley v. Franklin Sports, Inc.***, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001). "It must be based on objective evidence of record." ***Id.*** Our reviewing court further states that "[w]hile this court indeed warns against employing hindsight, its counsel is just that - a warning. That warning does not provide a rule of law that an express, written motivation to combine must appear in prior art references before

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a finding of obviousness. Stated differently, this court has consistently stated that a court or examiner may find a motivation to combine prior art references in the nature of the problem to be solved." **Ruiz v. A.B. Chance Co.**, 357 F.3d 1270, 1276, 69 USPQ2d 1686, 1690 (Fed. Cir. 2004). **Also see Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.**, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996); **Display Techs. Inc. v. Paul Flum Ideas, Inc.**, 282 F.3d 1340, 1346-47 (Fed. Cir. 2002); **In re Huang**, 100 F.3d 135, 139, 40 USPQ2d 1685, 1689 (Fed. Cir. 1996).

The Examiner points out that it is notoriously well known in the art to add a low-pass filter at the output of a circuit for rejecting unwanted high frequency signals. Furthermore, the Examiner points out that Hamano's low-pass filter would not filter out all of the signals of interests provided by the Miyata circuit. The Examiner points out that Hamano's Figure 10 shows that the low-pass filter would allow microwaves from the range of 30Mz to 35 Ghz to pass through and only the very high frequency signals would be blocked. See pages 5 and 6 of the answer.

Upon our review of Hamano, we agree with the Examiner's findings that Hamano's low-pass filter, shown in Figure 10, would

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indeed allow passage of microwave signals in the frequency range of 30Mz to 35 Ghz range. We note that this is taught in Hamano Figure 14 which shows a graph of the frequency characteristics of the low-pass filter.

We note that Miyata teaches a microwave switch. See page 1 of Miyata. We further find that Hamano teaches a filter circuit that would be used in radio communications using high speed signals of several gigabits per second, in other words in the microwave range. See Hamano, column 1, lines 5-17. Hamano further teaches that for microwave communication systems, there is often time a need for a low-pass filter to suppress the high frequency noise induced in the communication system. See column 1, lines 10-22. Therefore, we find that Hamano would have suggested to those skilled in the art to use Hamano's low-pass filter shown in Figure 10 in the Miyata microwave switch as proposed by the Examiner in order to provide a signal free from higher frequency noise.

In view of the foregoing, we have sustained the Examiner's rejection of claims 1 and 4 under 35 U.S.C. § 103 as being unpatentable in view of the Examiner's proposed combination of Miyata and Hamano.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

ERROL A. KRASS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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