

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GENE F. YOUNG

Appeal 2008-1444
Application 09/739,388
Technology Center 2600

Decided: November 3, 2008

Before KENNETH W. HAIRSTON, JOSEPH F. RUGGIERO,
and ELENI MANTIS MERCADER, *Administrative Patent Judges*.

MANTIS MERCADER, *Administrative Patent Judge*.

DECISION ON APPEAL

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STATEMENT OF THE CASE

Appellant seeks our review under 35 U.S.C. § 134 of the Examiner's rejection of claims 1-31. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

INVENTION

Appellant's claimed invention is directed to a system module having a plurality of serverlets that share I/O resources such as disk systems (Spec. 1:7-8).

Claim 1, reproduced below, is representative of the subject matter on appeal:

1. A system module to couple a switch fabric network to input/output (I/O) resources, said system module comprising:

a first serverlet;

a second serverlet;

a first switching device to couple to each of said first serverlet and said second serverlet and to said I/O resources via a bus connecting the first switching device and the I/O resources such that said first serverlet and said second serverlet share said I/O resources; and

a second switching device to couple to the switch fabric network and to the first and second serverlets.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Bealkowski	US 5,465,357	Nov. 07, 1995
Kaneko	US 5,739,777	Apr. 14, 1998
Chow	US 6,148,349	Nov. 14, 2000
Aguilar	US 6,199,137 B1	Mar. 06, 2001 (filed Jun. 04, 2000)
Hipp	US 6,325,636 B1	Dec. 04, 2001 (filed Jul. 20, 2000)
Whiting	US 6,456,626 B1	Sep. 24, 2002 (filed Dec. 21, 1998)
Matsunami	US 6,542,961 B1	Apr. 01, 2003 (filed Dec. 21, 1999)

The following rejection is before us for review:

1. Claims 1-6, 9-15, 18-22 and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chow in view of Matsunami.
2. Claims 7, 16, and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chow in view of Matsunami and further in view of Whiting.
3. Claims 8, 17, and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chow in view of Matsunami and Whiting and further in view of Kaneko.
4. Claims 25-26 and 29-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chow in view of Hipp.

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5. Claim 27 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Chow in view of Hipp and further in view of Aguilar.

6. Claim 28 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Chow in view of Hipp and further in view of Bealkowski.

OBVIOUSNESS

There are three obviousness issues before us regarding whether Appellant has shown that the Examiner erred in rejecting claims 1-31 under 35 U.S.C. § 103(a).

Regarding claims 1-24 and 31

The first issue is whether the Examiner erred in determining that Chow teaches a second switching device to couple to the switch fabric network and to the first and second serverlets as claimed. The first issue turns on whether Chow teaches a second switching device to couple to the switch fabric network and to the first and second serverlets as claimed and, furthermore, whether the claim language precludes the presence of additional serverlets.

The second issue is whether the Examiner erred in determining that the combination of Chow and Matsunami teaches or suggests a first switching device to couple to each of said first serverlet and said second serverlet and to said I/O resources as claimed. The second issue turns on whether Matsunami teaches a switching device that would provide accessibility between the IONs and the JBODs as desired by Chow.

Regarding claims 25-30

The third issue is whether the Examiner erred in determining that the combination of Chow and Hipp teaches or suggests a first switching device to couple to each of said first serverlet and said second serverlet and to said I/O resources as claimed. The third issue turns on whether Johnson is cumulative evidence, in view of the Examiner no longer relying on this reference, and whether the disputed claim limitation of “a first switching device to couple the serverlets to at least one disk system shared by the serverlets via a bus connecting the first switching device and the at least one disk system” is taught by Hipp.

FINDINGS OF FACT

The relevant facts include the following:

1. Chow teaches a “system interconnect” 228 that connects at least two IONs (i.e., serverlets, 212 and 214) to the BYNET interconnect fabric 106 (col. 4, ll. 46-47).
2. Chow teaches a processor 804 that provides circuit control for IONs (col. 25, ll. 40-44 and Fig. 8) wherein a “send-side interface” controls the transmission of data for the IONs and a “receive-side interface” controls the reception of data to the memory of IONs (col. 25, ll. 44-50).
3. Appellant’s disclosure defines a second switching device as a device that directs data to or from at least two serverlets (Fig. 6 and Spec. 9:20-10:10).
4. Chow teaches that data from any of the compute nodes can be transmitted via one of the interconnecting fabrics (106) to any one of the I/O nodes (i.e., serverlets) (col. 3, ll. 28-35).

5. Chow teaches that each ION device must have access to the JBODs (col. 8, ll. 63-67).
6. Matsunami teaches that each host device has access to all diskarrays (Figs. 4 and 15; col. 12, l. 66-col. 13, l.1 and col. 9, lines 12-24). Matsunami teaches a switching device (i.e., in Fig. 17, diskarray switch 20) that provides unrestricted access of a first type of devices (i.e., hosts 30) with a second type of devices (i.e., diskarray subsets 10).
7. Hipp discloses a first switch (in Fig. 1 and Fig. 5, item 48) that couples the serverlets (in Fig. 1, items 32) to the shared disk system (in Fig. 1, item 54), where the first switch is connected to the disk system by a bus (in Fig. 1, item 52).

PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734 (“While the sequence of

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these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”)

The claim terms should be given their broadest reasonable meaning in their ordinary usage as such claim terms would be understood by one skilled in the art by way of definitions and the written description. *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

The claims, of course, do not stand alone. Rather, they are part of a ‘fully integrated written instrument’ . . . consisting principally of a specification that concludes with the claims. For that reason, claims ‘must be read in view of the specification, of which they are a part.’ . . . [T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’

Phillips v. AWH Corp., 415 F.3d 1303, 1315 (Fed. Cir. 2005).

During ex parte prosecution, claims must be interpreted as broadly as their terms reasonably allow since applicants have the power during the administrative process to amend the claims to avoid the prior art. *In re Zletz*, 893 F.2d 319, 322 (Fed. Cir. 1989).

Claim terms are presumed to have their customary and ordinary meaning unless there is an express intention to impart the novel meaning of the claim terms. *SunRace Roots Enterprise Co., Ltd. v. SRAM Corp.*, 336 F.3d 1298, 1302 (Fed. Cir. 2003).

Although claims are interpreted in light of the specification, limitations from the specification are not read into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

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The transitional term “comprising” is inclusive or open-ended and does not exclude additional, unrecited elements. *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997).

“[O]ne cannot show non-obviousness by attacking references individually where . . . the rejections are based on combinations of references.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art.” *Id.* at 425.

In sustaining a multiple reference rejection under 35 U.S.C. § 103(a), the Board may rely on less than the total amount of evidence relied on by the Examiner without designating it as a new ground of rejection. *In re Bush*, 296 F.2d 491, 496 (CCPA 1961); *In re Boyer*, 363 F.2d 455, 458 n.2 (CCPA 1966).

There is no new ground of rejection when the basic thrust of the rejection remains the same such that an appellant has been given a fair opportunity to react to the rejection. See *In re Kronig*, 539 F.2d 1300, 1302-03, 190 USPQ 425, 426-27 (CCPA 1976). Where the statutory basis for the rejection remains the same, and the evidence relied upon in support of the rejection remains the same, a change in the discussion of, or rationale in support of, the rejection does not necessarily constitute a new ground of rejection. *Id.* at 1303, 190 USPQ at 427 (reliance upon fewer references in affirming a rejection under 35 U.S.C. 103 does not constitute a new ground of rejection).

MPEP § 1207.03 (III).

ANALYSIS

Initially, we note that claims 1-10 and 31 were argued as a group with claim 1 as representative (App. Br. 6-9).¹ Accordingly, claims 9-10 and 31, which are subject to the same ground of rejection, fall with claim 1 from which they depend. See 37 C.F.R. § 41.37 (c)(1)(vii) (2004). Appellant also argued claims 11-19 as a group with claim 11 as representative (App. Br. 9-13). Accordingly, claims 12-19, which are subject to the same ground of rejection, fall with claim 11 from which they depend. Furthermore, Appellant repeated the same arguments presented for claim 1, thus, claims 11-19 also fall with claim 1. Similarly, Appellant argued claims 20-24 as a group with claim 20 as representative (App. Br. 13-16), but repeated the same arguments as those presented for claim 1, and, thus, these claims also stand or fall with claim 1. Appellant argued claims 25-30 as a group with claim 25 as representative (App. Br. 17-18). Accordingly, claims 26-30, which are subject to the same ground of rejection, fall with claim 25 from which they depend. See 37 C.F.R. § 41.37 (c)(1)(vii) (2004). Appellant has presented no further arguments as to the additional references of Whiting, Kaneko, Aguilar, and Bealkowski. Thus, claims 1-24 and 31 stand or fall with claim 1 and claims 25-30 stand or fall with claim 25.

¹ Only arguments made by Appellant have been considered in this decision. Arguments which Appellant could have made but did not make in the Brief have not been considered and are deemed waived. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2004).

Regarding claims 1-24 and 31

a) Did the Examiner err in determining that Chow teaches a second switching device to couple to the switch fabric network and to the first and second serverlets as claimed?

Appellant argues that in Chow's Fig. 8 each ION (i.e., serverlet) connects to its own send side interface "box," (i.e., compute node A attaches to the top send side interface box while ION 212 attaches to the bottom send side interface box) and therefore, the send side interface does not switch between ION nodes (App. Br. 7). Appellant concludes that item 802 of Chow's Fig. 8 does not provide the recited switch coupling of the serverlets to a switch fabric (App. Br. 7). Appellant further states that if interface 802 is shared among IONs and compute nodes, then ION clique 226 and interface 802 could not be considered a single module as interpreted by the Examiner because of the additional ION cliques connected to interface 802 (App. Br. 7).

The Examiner responds that Chow teaches a "system interconnect" 228 that connects at least two IONs (i.e., serverlets, 212 and 214) to the BYNET interconnect fabric 106 (Finding of Fact 1 and Ans. 8-9). The Examiner states that processor 804 provides circuit control for IONs wherein a "send-side interface" controls the transmission of data for the IONs and a "receive-side interface" controls the reception of data to the memory of IONs (Finding of Fact 2 and Ans. 9). The Examiner concluded that one skilled in the art would recognize that the two interfaces direct data to or from at least two IONs (serverlets) and the interconnect fabrics, thereby meeting the limitation of the second switching device

as recited in claim 1 (Ans. 9). The Examiner further states that the second switching device was construed to be a device that directs data to or from at least two serverlets, which is consistent with Appellant's definition of a second switching device (Finding of Fact 3).

We agree with the Examiner's findings of facts and conclusions as set out in the Answer and adopt them as our own. We add the following primarily for emphasis.

Chow teaches that data from any of the compute nodes can be transmitted via one of the interconnecting fabrics (106) to *any* one of the I/O nodes (i.e., serverlets) (Finding of Fact 4) (emphasis added). Thus, it follows that Chow necessarily entails a second switching device (i.e., in Fig 8 element 802 and in col. 25, ll. 44-50 describing interconnections between any of the compute nodes with any one of the IONs) to couple to the switch fabric network (106) and to the first and second serverlets (i.e., 212 and 214) as recited in claim 1. In other words, if *any* of the IONs (i.e., serverlets) can be connected via the interconnect fabric 106 to *any* compute node, it follows, that there is necessarily a switching device allowing for the switching connections between the serverlets and the compute nodes (emphasis added). Furthermore, as noted by the Examiner, this interpretation of a second switching device is consistent with Appellant's own definition of such a device as directing data to or from at least two serverlets (Finding of Fact 3).

We are also not persuaded by Appellant's argument that if interface 802 is shared among IONs and compute nodes, then ION clique 226 and interface 802 could not be considered a single module due to the additional ION cliques

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connected to interface 802 (App. Br. 7). The open-ended transitional term “comprising” does not exclude additional, unrecited elements (i.e., additional ION cliques). *Genentech, Inc. v. Chiron Corp.*, 112 F.3d at 501. We further note that the term “single” is not claimed, and, thus, Appellant’s argument is not commensurate in scope with the claim language.

Thus, Appellant’s arguments have not persuaded us of error in the Examiner’s rejection of claims 1-24 and 31 because Chow teaches a second switching device to couple to the switch fabric network and to the first and second serverlets as claimed and furthermore, the claim language does not preclude additional serverlets connected to interface 802 (Findings of Fact 1-4).

b) Did the Examiner err in determining that the combination of Chow and Matsunami teaches or suggests a first switching device to couple to each of said first serverlet and said second serverlet and to said I/O resources as claimed?

Appellant notes that hosts 102 of Chow perform similar functions as the hosts 30 in Matsunami, namely, initiating storage requests and processing the results (App. Br. 8). Appellant further notes that both BYNET fabric 106 in Chow and diskarray switches 20 in Matsunami perform similar functions, namely, providing hosts 102/30 with access to different storage components (App. Br. 8). Appellant argues that the Examiner’s proposed combination interposes the diskarray switch 20 of Matsunami in between the I/O nodes 212, 214 and JBODs 222, 218 of Chow, and thereby ignores the function played by the diskarray in Matsunami (App. Br. 8 and Reply Br. 4-7). Appellant further argues that the Examiner’s proposed combination adds an additional stage to the task of servicing

requests that would result in further delay and additional logic (App. Br. 8).

Finally, Appellant argues that Matsunami's crossbar switch would undermine the accessibility between JBODs and IONs because the direct dedicated connections of Chow would be replaced with Matsunami's crossbar switch whereby access will be based on availability of the needed path (App. Br. 9).

The Examiner responds that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference, but rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. *In re Keller*, 642 F.2d at 425. (Ans. 11). The Examiner further states that it is reasonable from the disclosure of Matsunami that a switch for coupling the I/O resources (or JBODs) of Chow to the ION nodes would have been apparent to one skilled in the art (Ans. 11). The Examiner further states that in Chow each ION device must have access to the JBODs (Finding of Fact 5), while Matsunami similarly allows for each host device to access all diskarrays (Finding of Fact 6). Although two devices must transmit through the switch, it does not appear that the packet switch of Matsunami provides excessive delay to transmitted data to provide a bottleneck in the JBOD system of Chow (Ans. 11). The Examiner states that in Chow there must be some delay in communication between the ION and the JBOD because of the physical nature of the system (Ans. 11). However, Chow does not appear to disclose a limit to the delay before the system becomes inoperable (Ans. 11). The switch of Matsunami allows any host to address to any disk array as desired (Finding of Fact 6) and thus provides unrestricted access through the switch, as similar to the operation of the system of Chow (Ans. 11). Therefore, it does not

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appear that the teaching of Matsunami would cause the system of Chow to be inoperable (Ans. 11).

We agree with the Examiner's findings of facts and conclusions as set out in the Answer. We add the following primarily for emphasis.

Claim 1 requires "a first switching device to couple to each of said first serverlet and said second serverlet and to said I/O resources." Matsunami teaches a switching device (i.e., in Fig. 17, diskarray switch 20) that provides unrestricted access of a first type of devices (i.e., hosts 30) with a second type of devices (i.e., diskarray subsets 10) (Finding of Fact 6). The Examiner merely used the switching device of Matsunami according to the desirability of Chow to allow each of a first type of devices (i.e., IONs) to have access to a second type of devices (i.e., JBODs) (Finding of Fact 5). The function of the switch does not change. In other words, it is used to switch the connections between one type of devices with another type of devices. The fact that the functions of those devices are different in different applications is irrelevant as the Examiner only substituted the permanent connections in Chow for the switch in Matsunami. The switch will continue to function in switching the connections between the devices of choice.

Thus, Appellant's argument has not persuaded us of error in the Examiner's rejection of claims 1-24 and 31 because Matsunami teaches a switching device that would provide accessibility between the IONs and the JBODs as desired by Chow (Findings of Fact 5-6).

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Regarding claims 25-30

Did the Examiner err in determining that the combination of Chow and Hipp teaches or suggests a first switching device to couple to each of said first serverlet and said second serverlet and to said I/O resources as claimed?

Appellant argues against the combination of Chow in view of Hipp and Johnson and in particular the teachings of Johnson. The Examiner in the Answer relied upon the combination of Chow and Hipp (Ans. 6-8 and 12). As stated *supra*, where the statutory basis for the rejection remains the same, and the evidence relied upon in support of the rejection remains the same, a change in the discussion of, or rationale in support of, the rejection does not necessarily constitute a new ground of rejection (reliance upon fewer references in affirming a rejection under 35 U.S.C. § 103 does not constitute a new ground of rejection). MPEP § 1207.03 (III).

The Examiner stated that Hipp discloses a first switch (in Fig. 1 and Fig. 5, item 48) that couples the serverlets (in Fig. 1, items 32) to the shared disk system (in Fig. 1, item 54), where the first switch is connected to the disk system by a bus (in Fig. 1, item 52) (Finding of Fact 7 and Ans. 12). Thus, we find the Examiner's use of the no longer relied on secondary reference of Johnson cumulative as the disputed claim limitation of "a first switching device to couple the serverlets to at least one disk system shared by the serverlets via a bus connecting the first switching device and the at least one disk system" as recited in claim 25 is taught by Hipp. We note that Appellant has not further argued the treatment of Johnson as cumulative evidence (Reply Br. 4-7).

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Thus, Appellant's argument has not persuaded us of error in the Examiner's rejection of claims 25-30 because Johnson is cumulative evidence as the disputed claim limitation of "a first switching device to couple the serverlets to at least one disk system shared by the serverlets via a bus connecting the first switching device and the at least one disk system" as recited in claim 25 is taught by Hipp (Findings of Fact 7).

CONCLUSION OF LAW

We conclude that Appellant has not shown that the Examiner erred in rejecting claims 1-31 under 35 U.S.C. § 103(a).

ORDER

The decision of the Examiner to reject claims 1-31 is affirmed.

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

AFFIRMED

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