

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WIM A. COEKAERTS

Appeal 2007-2489
Application 10/305,483
Technology Center 2100

Decided: March 31, 2008

Before HOWARD B. BLANKENSHIP, ALLEN R. MACDONALD, and
ST. JOHN COURTENAY III, *Administrative Patent Judges*.

BLANKENSHIP, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-30, of which claims 1-5, 7-20, and 22-30 remain rejected. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Background

A cluster is a group of independent servers that collaborate as a single system. (Spec. ¶ [0002].) Each node in a cluster needs to keep other nodes in that cluster informed of its health and configuration. This has been done by periodically broadcasting a network message, called a heartbeat, across a network. (*Id.*, ¶ [0003].) In prior systems, the cluster interconnect has been built by installing network cards in each node, typically using a low-cost/slow-speed Ethernet card, or a high-cost/high-speed proprietary interconnect. Appellant, instead, uses a *low-cost/high-speed* interconnect card, in accordance with IEEE 1394 protocol (*id.*, ¶¶ [0004] - [0006]), which is specified by an industry standard (¶¶ [0032] - [0034]). Claim 1 is illustrative.

1. A heartbeat mechanism for a cluster including a plurality of nodes, comprising:

a quorum file for receiving heartbeat messages from the plurality of nodes; and

a network controller for connecting the quorum file to the plurality of nodes where the network controller provides communication with the quorum file in accordance with the IEEE 1394 protocol.

The Examiner relies on the following references as evidence of unpatentability.

Wipfel	US 6,353,898 B1	Mar. 5, 2002
Chan	US 2002/0131423 A1	Sep. 19, 2002
Sun	US 2003/0061340 A1	Mar. 27, 2003
Bernier	US 6,754,171 B1	Jun. 22, 2004
Bommareddy	US 6,779,039 B1	Aug. 17, 2004

Claims 1, 3-5, 9-14, 16, 17, 19, 20, and 22-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chan and Wipfel.¹

Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Chan, Wipfel, and Bernier.

Claims 7 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chan, Wipfel, and Sun.

Claims 8 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chan, Wipfel, and Bommareddy.

Claims 6 and 21 are objected to as being dependent upon a rejected claim, but allowable if rewritten in independent form. (Ans. 11.)

Claims 31-35 have been canceled.

Representative claims

Based on Appellant's arguments in the Appeal Brief, we will consider certain claims as representative in our review of the rejections. Appellant's arguments guide our selection of claims, rather than the headings in the Appeal Brief. *See* 37 C.F.R. § 41.377(c)(1)(vii).

Claim 1

Claim 1 is rejected under § 103(a) over Chan and Wipfel.

Chan describes a distribution server cluster 406 (Fig. 6). Chan ¶ [0065]. Each distribution server 504 periodically registers a “heartbeat” in a

¹ Claims 1 and 9 are also “objected to” (Ans. 3), without any cited basis in a statute or regulation.

control unit database in storage system 414. Periodically, each distribution server 504 will check the database for the heartbeats of other distribution servers. *Id.*, ¶ [0067].

The Examiner finds that Chan meets all requirements of claim 1 but for the network controller providing communication with the quorum file “in accordance with the IEEE 1394 protocol.” The Examiner turns to Wipfel for the teaching that communication within a cluster in accordance with the protocol was well known and conventional (col. 6, ll. 26-31), concluding that it would have been obvious to combine the teachings such that the communication described by Chan is in accordance with the 1394 protocol. (Ans. 4.)

Appellant submits that Chan does not disclose the claimed network controller. (App. Br. 13.) That Chan does not disclose the claimed network controller is not in controversy, as the rejection is not for anticipation.

Appellant next contends (*id.*) that Chan does not disclose a quorum file being connected by “that network controller” to a plurality of nodes. If Appellant believes that Chan does not describe a quorum file, as claimed, connected to a “plurality of nodes,” we agree with the Examiner that the artisan would consider each distribution server to be a node (as is storage system 414) on the network depicted in Figure 6 of the reference.

Further, in the relied-upon portion of Chan, the reference describes distribution server clusters in Figure 6 (¶¶ [0064-0068]). Wipfel teaches that in clusters having several servers 102 (Fig. 1), nodes communicate using interconnects 112 (Fig. 2) with protocols that include those “in accordance

with the IEEE 1394 protocol,” as claimed. Wipfel col. 5, ll. 59-67; col. 6, ll. 26-37.

As the Examiner indicates, Chan describes a switch 412 (Fig. 6) connecting nodes on the network but does not describe the details of the communication between nodes. Wipfel describes an interconnect 112 (Fig. 2) on each side of a network switch 204 to effect communication between nodes.

Appellant submits that Wipfel’s invention relates to “remote memory probes” that are deemed to improve over conventional heartbeat signals (e.g., col. 9, ll. 13-37). (App. Br. 13-14.) The rejection, however, is based on the use of heartbeat signals as described by Chan in view of Wipfel’s teachings directed to conventional protocols for communication between nodes. “The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain.” *In re Heck*, 699 F.2d 1331, 1333 (Fed. Cir. 1983) (quoting *In re Lemelson*, 397 F.2d 1006, 1009 (CCPA 1968)).

Further, we agree with Appellant (Reply Br. 2-4) to the extent that many different types of network communication protocols may be used. The present inquiry, however, is directed to the particular protocol that Appellant claims as part of the invention. That the artisan might have had many different protocols from which to choose does not establish the non-obviousness of selecting one from among those that were conventional. We also note that open-ended claim 1 (“comprising”) does not prevent the quorum file from being resident on a network node, which may be

considered a different node from the “plurality of nodes” that the claim recites.

Appellant alleges that the Final Rejection “neither ascertains nor reports on the level of ordinary skill in the art.” (App. Br. 23.) The complaint is answered by the Examiner at page 22 of the Answer: “Based on the prior art and the explanation of the combination of references provided above, examiner has ascertained what would have been obvious to one [of] ordinary skill in the art.”

The references demonstrate that the artisan was capable of making the proposed combination, applying an industry standard protocol to a heartbeat mechanism having a quorum file for receiving heartbeat message from a plurality of nodes. *See In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (USPTO board did not err in adopting the approach that the level of skill in the art was best determined by the references of record). Appellant has not adduced evidence -- nor even offered any explanation -- in support of why the combination would have been beyond the skill of the ordinary artisan.

Moreover, a person having ordinary skill in the art uses known elements for their intended purpose. *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969) (radiant-heat burner used for its intended purpose in combination with a spreader and a tamper and screed). “[W]hen a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.” *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740 (2007) (quoting *Sakraida v.*

Ag Pro, Inc., 425 U.S. 273, 282 (1976)). Appellants have provided no evidence tending to show that using an industry standard protocol for communication was “uniquely challenging or difficult for one of ordinary skill in the art.” *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 127 S. Ct. at 1740-41).

We conclude that the Examiner has established a prima facie case for obviousness for the subject matter as a whole of claim 1, which stands unrebutted. We sustain the rejection of claim 1. Claims 9, 22, 25, and 29 fall with claim 1, which appear under separate headings but are not separately argued in the Appeal Brief.²

Claim 19

Claim 19 is rejected under § 103(a) over Chan and Wipfel.

Appellant submits that “registering a heartbeat in a control unit database sounds more like storing a record in a general purpose database rather than allocating a quorum file.” (App. Br. 17.) The Examiner responds that since the control unit database in Chan constitutes a file or area within a storage system or device, the reference discloses allocating a quorum file for storing status messages retrieved from nodes in the cluster. (Ans. 18.)

We sustain the rejection of claim 19, as no error has been shown in the Examiner’s finding. Moreover, Appellant has not shown that storing a heartbeat message in “a general purpose database” is something different

² Claims 22 and 25 depend from independent claim 19. Claim 29 depends from independent claim 26. We also sustain the rejection of claims 19 and 26, *infra*.

from allocating a quorum file. According to the claim, a quorum file is a file “for storing status messages received from nodes in the cluster,” which Chan has.

Claim 26

Claim 26 is rejected under § 103(a) over Chan and Wipfel.

Apart from reliance on the arguments presented against the rejection of claim 1, Appellant alleges that “neither of the references discloses communicating a quorum file to a distribution server.” (App. Br. 19.)

We disagree. Chan discloses that “[p]eriodically, each distribution server 504 will check the database for the heartbeats of other distribution servers.” Chan ¶ [0067].

We sustain the rejection of claim 26.

Claim 5

Claim 5 is rejected under § 103(a) over Chan and Wipfel.

The Examiner finds that Chan maintains a “node map” because the database provides the status of each of the distribution servers or nodes. (Ans. 4-5.)

Appellant submits that a node map relates to defining the topology of the nodes, while heartbeats relate to a node’s health or status, referring to instant Specification paragraph [0034]. (App. Br. 15.)

Specification paragraph [0034] states, “[e]ach node maintains a node map 180 that keeps track of the current state of the network topology/configuration.” The Specification appears to describe an

embodiment, rather than set forth a definition of “node map.” Our reviewing court has repeatedly warned against confining the claims to specific embodiments described in the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc).

Moreover, Appellant does not indicate why maintaining the status of each of the distribution servers or nodes (as in Chan) is not “keeping track” of the current state of the network topology or configuration. In any event, claim 5 does not recite “network topology” or “configuration.” The claim recites that the node map is “for identifying active nodes,” which Chan does.

We are therefore not persuaded of error in the rejection of claim 5, and sustain the rejection.

Claim 10

Claim 10 is rejected under § 103(a) over Chan and Wipfel.

With respect to claim 10, Appellant submits that Chan describes “a distribution server 504” but nothing else. (App. Br. 16.)

Chan describes distribution servers 504 accessing data on storage volumes 603 in shared storage system 414. Chan ¶ [0065]. Shared storage system 414 also maintains heartbeats in a control unit database. Chan ¶ [0067].

Chan thus supports the Examiner’s findings that the reference indicates that one or more shared files reside in the shared storage system 414 and that the quorum file is maintained in at least one (separate) storage volume. (Ans. 5-6.)

We sustain the rejection of claim 10.

Claim 12

Claim 12 is rejected under § 103(a) over Chan and Wipfel.

The claim recites a “first network” for providing communication between the shared files and the plurality of nodes, and a “second network” for providing communication between the quorum file and the plurality of nodes.

Appellant argues that “Appellant fails to see a disclosure of the two claimed networks in the cited paragraphs” of Chan (App. Br. 17). However, what Appellant sees (or fails to see) is not the test for obviousness.

Claim 12 does not place limitations on the two networks, rather than the providing of communication between the named file or files and the nodes. The claim thus could be read as setting forth two logical networks, rather than two separate physical networks. As we have indicated (in regard to claim 10), the Examiner’s findings that Chan describes communication on a network between a plurality of nodes and both of shared files and a quorum file have not been demonstrated to be erroneous.

In any event, the Examiner finds that the “first” and the “second” network may be “the same” network. That appears to be the case; see depending claim 14, “wherein the first network and the second network are the same network.”

We sustain the rejection of claim 12.

Claim 2

Claim 2 stands rejected under § 103(a) over Chan, Wipfel, and Bernier. The claim recites that the network controller of claim 1 “is an IEEE 1394 card.” The Examiner adds Bernier to the basic combination of Chan and Wipfel. Bernier depicts (Fig. 1) a physical embodiment of a network card 106. The Examiner finds that, in essence, to implement the IEEE 1394 protocol one uses an IEEE 1394 card. (Ans. 9, 19-20.)

Appellant submits that “[w]hile Bernier does disclose a network device having network cards, simply finding a reference with the term ‘network controller’ in it does not satisfy the standard for motivation to combine.” (App. Br. 20.)

On this record, we are not persuaded that one skilled in the art would have found it non-obvious to use an IEEE 1394 card to implement the IEEE 1394 protocol. A person having ordinary skill in the art uses known elements for their intended purpose. *See Anderson’s-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969).

We sustain the rejection of claim 2.

Claim 8

Claim 8 is rejected under § 103(a) over Chan, Wipfel, and Bommareddy. The claim recites that the cluster of claim 1 “is a database cluster.” The Examiner adds Bommareddy to the basic combination of Chan and Wipfel. Bommamareddy describes a database server cluster 120 (Fig. 1).

Appellant submits that “merely reciting the term cluster is not enough to prove the obviousness of combining specific features with Chan or Wipfel because they also recite the term cluster.” (App. Br. 21.)

The teachings of Bommareddy may be considered merely cumulative with respect to claim 8, as Chan describes a “database cluster” for all that the claim requires. As we have indicated, Chan discloses a distribution server cluster that accesses data in a shared storage system (¶ [0065]) that includes a control unit database (¶ [0067]). Moreover, each distribution server 504 has job queue images stored in a database in storage system 414. Chan ¶ [0066].

We sustain the rejection of claim 8.

Remainder of the claims

We have considered representative claims to the extent that claims have been separately argued. Appellant has not demonstrated any claim to be rejected in error. We thus sustain the rejection of the claims that we have not listed in our discussion.

CONCLUSION

The rejection of claims 1-5, 7-20, and 22-30 under 35 U.S.C. § 103(a) is affirmed.

Appeal 2007-2489
Application 10/305,483

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

AFFIRMED

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