

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* DAVID UMBERGER and GUILLERMO NAVARRO

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Appeal 2007-0965  
Application 10/264,573  
Technology Center 2100

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Decided: May 16, 2007

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Before JOHN C. MARTIN, JOSEPH F. RUGGIERO, and  
ST. JOHN COURTENAY III, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-22.

THE INVENTION

The disclosed invention generally relates to systems and methods for control of an array of computer-accessible disks. More particularly, the

Appeal 2007-0965  
Application 10/264,573

disclosed invention provides a method and system for automatically managing the use of different RAID levels within an array, such that free space within the array is created responsive to the present free space and the current rate of use (Specification 1-2).

Representative claim 1 is illustrative:

1. A method of managing a data storage array, comprising:  
providing a plurality of computer disks configured to store data;  
configuring the plurality of computer disks as a RAID array;  
coupling a controller to the RAID array;  
measuring a utilization rate at which the array is accessed using the controller; and  
selectively moving blocks of data within the RAID array such that free space is created within the RAID array responsive to the measuring the rate using the controller.

#### THE REFERENCES

The Examiner relies upon the following references as evidence of anticipation and unpatentability:

Burkes	US 5,664,187	Sep. 2, 1997
Bertin	US 6,426,530 B1	July 30, 2002

#### THE REJECTIONS

The following rejections are on appeal before us:

1. Claims 1-6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Burkes.
2. Claims 7-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the teachings of Burkes in view of Bertin.

Appeal 2007-0965  
Application 10/264,573

Rather than repeat the arguments of Appellants or the Examiner, we make reference to the Briefs and the Answer for the respective details thereof.

#### OPINION

Only those arguments actually made by Appellants have been considered in this decision. It is our view, after consideration of the record before us, that the evidence relied upon supports the Examiner's rejection of claims 1-6, but does not support the Examiner's rejection of claims 7-22. Accordingly, we affirm-in-part.

#### CLAIMS 1-6

We consider first the Examiner's rejection of independent claims 1-6 as being anticipated by *Burkes*. Since Appellants' arguments with respect to this rejection have treated these claims as a single group which stand or fall together, we will select independent claim 1 as the representative claim for this rejection. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2004).

Appellants argue that *Burkes* does not disclose measuring a utilization rate, as that term is commonly understood. Appellants assert that the term "utilization rate" is understood as the ratio of two quantities: (1) the measured usage of something divided by (2), the maximum possible usage of that same thing. Appellants assert that *Burkes* merely discloses measuring how often the data is accessed without comparison to any maximum possible "oftenness" of accessing the data. Appellants further argue that *Burkes* fails to disclose measuring a utilization rate at which the array is accessed using the controller (Br. 5).

The Examiner disagrees. The Examiner points to Appellants' Specification that broadly defines the utilization rate (U) as follows:

d2) U is a measure of the rate at which access operations are being performed (i.e., utilization) on storage 128 by users 156, and is determined by the I/O monitor 118. U is a dynamically changing value.

(Specification 6, ¶ 0025).

The Examiner notes that the Specification is silent with respect to the argued features of a “maximum possible usage of the same thing” or a “measurement of the maximum possible rate at which the array can be accessed” (Answer 12-13). The Examiner further points out that the definition of “utilization rate” proffered by Appellants calculates a ratio and not a rate (i.e. where the ratio equals the rate of RAID array access divided by the maximum possible rate of RAID array access)(Answer 13).

With respect to the argued limitation of *using the controller* to measure a utilization rate at which the array is accessed, the Examiner asserts that all access to Burkes' memory must be facilitated by a controller. Therefore, the Examiner finds that Burkes' measurement of how often data is accessed is a representation of the utilization rate of access using the controller, since all accesses use the controller (Answer 13).

In the Reply Brief, Appellants provide various web page URL addresses as extrinsic evidence to buttress their interpretation of the recited “utilization rate” (Reply Br. 2-3).

In rejecting claims under 35 U.S.C. § 102, a single prior art reference that discloses, either expressly or inherently, each limitation of a claim invalidates that claim by anticipation. *Perricone v. Medicis Pharm.*

Appeal 2007-0965  
Application 10/264,573

*Corp.*, 432 F.3d 1368, 1375-76, 77 USPQ2d 1321, 1325-26 (Fed. Cir. 2005) (citing *Minn. Mining & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1565, 24 USPQ2d 1321, 1326 (Fed. Cir. 1992)). To establish inherency, the extrinsic evidence “must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). Anticipation of a patent claim requires a finding that the claim at issue “reads on” a prior art reference. *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d 1342, 1346, 51 USPQ2d 1943, 1945 (Fed. Cir. 1999) (“In other words, if granting patent protection on the disputed claim would allow the patentee to exclude the public from practicing the prior art, then that claim is anticipated, regardless of whether it also covers subject matter not in the prior art.”) (internal citations omitted).

We begin our analysis by construing the claim term “utilization rate” by applying the broadest reasonable interpretation consistent with the Specification. *See In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000) (“during examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification.”). As pointed out by the Examiner, the Specification broadly discloses that “U is a measure of the rate at which access operations are being performed (i.e., utilization) on storage 128 by users 156 ...” (Specification 6, ¶ 0025). Therefore, we agree with the Examiner that the recited “utilization rate” broadly but reasonably reads on Burkes’ disclosure of a data access frequency policy where data is migrated based upon how often the data is

Appeal 2007-0965  
Application 10/264,573

accessed by the user (col. 2, ll. 14-16). We also agree with the Examiner that Appellants are reading limitations into the claims. We note that patentability is based upon the claims. “It is the claims that measure the invention.” *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121, 227 USPQ 577, 585 (Fed. Cir. 1985) (en banc).

With respect to Appellants’ argument that Burkes fails to disclose measuring a utilization rate at which the array is accessed *using the controller*, we disagree. We note that Burkes discloses that a disk array controller coordinates data transfer to and from the disks (col. 1, ll. 60-63). In particular, we find the language of the claim (i.e., “measuring a utilization rate at which the array is accessed using the controller”) broadly but reasonably reads on Burkes’ disclosure that “frequency distribution tables are preferably formed in a volatile RAM in the disk array controller 14 and rebuilt after each system initialization” (col. 11, ll. 51-53). Therefore, we find that Burkes discloses all that is claimed. Accordingly, we will sustain the Examiner’s rejection of representative claim 1 as being anticipated by Burkes.

We note that Appellants have not presented any substantive arguments directed separately to the patentability of dependent claims 2-6. In the absence of a separate argument with respect to the dependent claims, those claims stand or fall with the representative independent claim. *See In re Young*, 927 F.2d 588, 590, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991). *See also* 37 C.F.R. § 41.37(c)(1)(vii)(2004). Therefore, we will sustain the Examiner’s rejection of claims 2-6 as being anticipated by Burkes for the same reasons discussed *supra* with respect to independent claim 1.

### INDEPENDENT CLAIMS 7 AND 12

We consider next the Examiner's rejection of independent claim 7 as being unpatentable over Burkes in view of Bertin.

Appellants argue that Burkes fails to teach or suggest creating free space within the disk array, if the utilization rate is below a threshold utilization rate, responsive to the amount of free space and the utilization, wherein the free space is not created if the utilization rate is greater than or equal to the threshold utilization rate whereby slowed response times that could occur under conditions of high utilization are avoided. Appellants further argue that nothing in the Bertin secondary reference remedies the deficiencies of Burkes (Br. 8-10).

The Examiner disagrees. The Examiner notes that Burkes discloses a system threshold of unused RAID-level storage (col. 9, ll. 35-40). The Examiner also points out that Burkes discloses creating unused RAID areas during idle time (col. 9, l. 65 through col. 10, l. 10). Therefore, the Examiner corresponds Burkes' disclosure of "idle time" to a time where the utilization rate must be below a threshold value (Answer 14).

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). "[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability." *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443,

Appeal 2007-0965  
Application 10/264,573

1444 (Fed. Cir. 1992). Furthermore, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness’ . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385, 1396 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)).

After carefully considering all the evidence before us, we find that Burkes’ teaching of attempting to convert an unused RAID area (i.e., a free area) to a mirror RAID area without violating a *system threshold of unused RAID-level storage* does not meet the language of the claims that requires “wherein the free space is *not created* if the utilization rate is greater than or equal to the *threshold utilization rate* . . .” (see Burkes col. 9, ll. 35-40; see also instant claims 7 and 12, emphasis added). Nor do we find this gap to be filled by Burkes’ affirmative teaching of “creating unused [i.e., free] RAID areas during idle time” (col. 10, l. 1).

We find the Examiner has interpreted Burkes’ “idle time” as a time of no access that corresponds to the instant claimed “threshold utilization rate” (See Answer 14, ¶ 2, ll. 7-11). Thus, we find that Burkes teaches creating unused RAID areas (i.e., creating free space) when the utilization rate *equals* the threshold utilization rate of zero access (i.e., during idle time) (see Burkes, col. 10, l.1). Therefore, we find Burkes does not teach or suggest the recited negative limitation that requires *not creating* free space if the utilization rate is greater than *or equal to* the threshold utilization rate (see

Appeal 2007-0965  
Application 10/264,573

instant claims 7 and 12). Furthermore, we agree with Appellants that nothing in Bertin cures the deficiencies of Burkes.

Because we find the combination of Burkes and Bertin fails to teach or fairly suggest all the recited limitations, we agree with Appellants that the Examiner has failed to meet the burden of presenting a prima facie case of obviousness. Accordingly, we will reverse the Examiner's rejection of independent claims 7 and 12 as being unpatentable over Burkes in view of Bertin.

#### DEPENDENT CLAIMS 8-11 AND 13-15

Since dependent claims 8-11 and 13-15 each contain the limitations of their associated independent claims, we will also reverse the Examiner's rejection of these dependent claims as being unpatentable over Burkes in view of Bertin.

#### INDEPENDENT CLAIM 16

We consider next the Examiner's rejection of independent claim 16 as being unpatentable over Burkes in view of Bertin.

Appellants argue that Burkes fails to teach or suggest means for selectively moving the data within the storage means responsive to the quantity determined by the determining means and the rate measured by the measuring means, such that free space is created within the storage means, but wherein the data is not moved if the utilization rate is greater than or equal to a threshold utilization rate. Appellants further argue that nothing in the Bertin secondary reference remedies the deficiencies of Burkes (Br. 10).

We note that the Examiner has rejected independent claim 16 for the same reasons previously given for independent claim 7 (*see* Answer 9, last

Appeal 2007-0965  
Application 10/264,573

line). Likewise, in the “Response to Argument” section of the Answer, the Examiner does not address independent claim 16 separately from independent claims 7 and 12 (*see* Answer 12-16). In reviewing the Examiner’s rejection, we find the Examiner has failed to point to a specific teaching in either *Burkes* or *Bertin* that meets the recited negative limitation of “wherein data is not moved [i.e., migrated] if the utilization rate is greater than or equal to a threshold utilization rate” (claim 16). Therefore, we agree with Appellants that the Examiner has failed to meet the burden of presenting a *prima facie* case of obviousness. Accordingly, we will reverse the Examiner’s rejection of independent claim 16 as being unpatentable over *Burkes* in view of *Bertin*.

#### DEPENDENT CLAIMS 17-22

Since dependent claims 17-22 each contain the limitations of independent claim 16, we will also reverse the Examiner’s rejection of these claims as being unpatentable over *Burkes* in view of *Bertin*.

#### DECISION

We sustain the Examiner’s rejection of claims 1-6, but we reverse the Examiner’s rejection of claims 7-22. Therefore, the decision of the Examiner rejecting claims 1-22 is affirmed-in-part.

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).

Appeal 2007-0965  
Application 10/264,573

AFFIRMED-IN-PART

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HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins CO 80527-2400