

The opinion in support of the decision being entered
today is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STANLEY E. KREHBIEL, JR., CAREY W. LEWIS,
WILLIAM A. HETRICK, and JOSEPH G. MOORE

Appeal 2007-0426
Application 10/145,307
Technology Center 2100

Decided: August 28, 2007

Before JAMES D. THOMAS, MAHSID D. SAADAT,
and JEAN R. HOMERE, *Administrative Patent Judges*.

SAADAT, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from a final rejection of claims 1, 3-9, 11-17, and 19-22, which are all of the claims pending in this application, as claims 2, 10, and 18 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

Appellants invented a method and an apparatus for increased data storage performance in multiple primary storage devices wherein an unused, unassigned storage device is selected to be used as a replacement drive when one of the primary storage devices fails (Specification 6).

Claim 1, which is representative of the claims on appeal, reads as follows:

1. A method in a data processing system for increasing data storage performance, the data processing system having a plurality of primary storage devices and a first unused, unassigned storage device, the method comprising the computer-implemented steps of:

establishing a logical volume definition that defines a logical volume utilizing said plurality of primary storage devices;

detecting a failure of a first storage device of said plurality of primary storage devices; and

in response to said detecting step, reconstructing data stored on said first storage device from data on other storage devices of said plurality of primary storage devices to form reconstructed data, saving said reconstructed data to said first unused, unassigned storage device, and automatically assigning, within said logical volume definition, said first unused, unassigned storage device to be a replacement primary device for said first storage device.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Dunphy, Jr.	US 5,077,736	Dec. 31, 1991
Golasky	US 6,880,101 B2	Apr. 12, 2005

The Examiner rejected claims 1, 3-9, 11-17, and 19-22 under 35 U.S.C. § 103(a) based upon the teachings of Dunphy and Golasky.

ISSUE

The issue is whether Appellants have shown that the Examiner erred in rejecting the claims under 35 U.S.C. § 103. Appellants urge that the logical units replaced by Golasky are not physical entities and instead, reside on a physical device while these units are not themselves physical devices (Br. 12). Based on such interpretation, Appellants argue that one of ordinary skill in the art would not combine these different entities disclosed by the references to arrive at the claimed invention (Br. 13). Therefore, the issue turns on whether there is a legally sufficient justification for combining the disclosures of Dunphy and Golasky and, if so, whether the combination of the applied references teaches the claimed subject matter including “automatically assigning, within said logical volume definition, said first unused, unassigned storage device to be a replacement primary device for said first storage device.”

FINDINGS OF FACT

The following findings of fact (FF) are relevant to the issue involved in the appeal and are believed to be supported by a preponderance of the evidence.

1. Dunphy provides for a plurality of disk drives for storing data in parallel as redundancy groups and a pool of R backup disk drives to automatically substitute a replacement disk drive for a failed disk drive in a redundancy group (Abstract; col. 5, ll. 10-18).

2. Dunphy further discloses maintaining a group of U unassigned disk drives that can be powered up as needed and assigned to either a redundancy group or to the pool of backup disk drives (Abstract).

3. Dunphy points to the benefits of using of an amorphous pool containing a large number of switchably interconnectable disk drives as flexible (col. 5, ll. 60-64).

4. Golasky provides for automatic data restoration (Abstract) wherein an agent module automatically transfers data from a backup storage device to a spare storage device in response to detecting a failure at a storage device (col. 2, ll. 1-5).

5. Figure 1 of Golasky shows logical units 16 and 18 located on storage device 14, which may be used in place of the other in case of failure of one of the logical units (col. 3, ll. 26-37).

6. Storage device 14 of Golasky may be one or a collection of hard disks, RAID devices, optical or magnetic medium or any other suitable type of non-volatile storage (col. 4, ll. 28-31).

7. Storage device 14 may further be grouped into one or more volumes or logical units and each be assigned a logical unit number (LUN) address (Golasky, col. 4, ll. 31-37).

8. Specifically, the available physical storage of storage device 14 is mapped into a plurality of logical unit devices such as logical units 16 and 18, which may be accessed through one or more ports on storage device 14 and may provide virtual storage for the network (Golasky, col. 4, ll. 42-47).

9. Golasky further discloses that multiple storage devices at distributed locations on the network may be available and/or multiple

physical storage devices may be included within storage device 14 (col. 4, ll. 47-51).

10. As a failure message from the storage device is received (Golasky, col. 6, ll. 14-18), the agent module locates and configures an unassigned logical unit after it determines that the logical unit is not assigned to the host (*id.* at col. 6, ll. 25-28).

PRINCIPLES OF LAW

To reach a conclusion of obviousness under § 103, the Examiner bears the burden of producing factual basis supported by teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Our reviewing court requires this evidence 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).

Furthermore, the test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. See *In re Kahn*, 441 F.3d 977, 987-88, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), *In re Young*, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991) and *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

“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, 82 USPQ2d 1385, 1391 (2007).

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Leapfrog Enter., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161, 82 USPQ2d 1687, 1691 (Fed. Cir. 2007) (quoting *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739, 82 USPQ2d 1385, 1395 (2007)). “One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.” *KSR*, 127 S. Ct. at 1742, 82 USPQ2d at 1397.

ANALYSIS

The Examiner characterizes the logical units included in storage device 14 of Golasky as the claimed storage devices whose failure is detected by an agent module that assigns an unused and unassigned storage device as the replacement for the failed storage device (Answer 14-16). The Examiner reads the claimed storage devices on logical units 16 and 18 and asserts that they may be assigned as a substitute for a failed device if that logical volume is not assigned (*id.*).

Appellants point to Figure 1 of Golasky and argue that, instead of assigning a storage device, the reference configures a logical unit within a storage device (Br. 12). According to Appellants, the claimed logical volume contains multiple physical devices which are replaced in case of failure (*id.*). Appellants assert that Golasky “does not replace a physical entity (a primary storage device) with another physical entity (unassigned

storage device)” and instead, “replaces a logical unit, which resides on a physical device, but is not itself a physical device” (*id.*).

We agree with the Examiner that Golasky’s logical units within storage device 14 are physical devices (FF 6-9). The logical units correspond to the actual non-volatile physical storage devices within storage device 14 which may be grouped into logical units. In that regard, the collection of physical storage devices within storage device 14 forms the logical units which may be replaced in case of failure with an unassigned unit.

Therefore, contrary to Appellants’ assertion (Br.13), combining Golasky with Dunphy does not involve different management techniques necessary for physical and logical entities. In fact, since both require assigning physical devices as the replacement for a failed device, one of ordinary skill in the art would have combined the references to benefit from the recovery system of Golasky automatically assigning unassigned devices in order to reduce the need for additional storage devices and increase the speed of the system.

CONCLUSION OF LAW

Because Appellants have failed to point to any error in the Examiner’s position, we sustain the § 103 rejection with respect to claim 1 and also with respect to claims 3-9, 11-17, and 19-22, which are argued either together with claim 1 or merely based on the same reasons discussed in relation with claim 1 (Br. 9-13). Therefore, we sustain the 35 U.S.C. § 103 rejection of claims 1, 3-9, 11-17, and 19-22 over Dunphy and Golasky.

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DECISION

The decision of the Examiner rejecting claims 1, 3-9, 11-17, and 19-22 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

tdl/ce

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