

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 NATAN VISHLITZKY, HAIM KOPYLOVITZ,
HANA MORESHET and ADI OFER

Appeal 2007-1951
Application 10/120,016
Technology Center 2100

Decided: September 26, 2007

Before LEE E. BARRETT, ANITA PELLMAN GROSS and ROBERT E.
NAPPI, *Administrative Patent Judges*.

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DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 6(b) (2002) of the final rejection of claims 1 through 3, 5 through 16, 22 through 28, 30, and 32 through 34. For the reasons stated *infra*, we will not sustain the Examiner's rejection of these claims.

INVENTION

The invention is directed to a method of providing copies of portions of data stored on a computer storage device. Claim 1 is representative of the invention and reproduced below:

1. A method of providing a point-in-time copy of stored data, comprising:

providing a virtual storage area having a table of pointers that point to sections of the stored data and to sections of at least one other storage area, wherein the virtual storage area contains no sections of data;

in response to a write of new data to a section of the stored data pointed to by a pointer of the table of the virtual storage area, copying the section of stored data to a section of the at least one other storage area prior to the write, causing a pointer of the virtual storage area to point to the section of the at least one other storage area, and writing the new data to the section of the stored data;

in response to a request for accessing data of the virtual storage area, determining which particular one of the other storage areas contain the data; and

accessing the data on the particular one of the other storage areas using the table of pointers.

REFERENCES

The references relied upon by the Examiner are:

Grummon	US 6,460,054 B1	Oct. 1, 2002 (filed Dec. 16, 1999)
West	US 6,446,176 B1	Sep. 3, 2002 (filed Mar. 9, 2000)
Hitz	US 5,819,292	Oct. 6, 1998
Brady	US 5,784,698	Jul. 21, 1998

Suresh B. Siddha, "A Persistent Snapshot Device Driver for Linux," Proceedings of the 5th Annual Linux Showcase &Conference. Nov. 5-10, 2001.

REJECTIONS AT ISSUE

Claims 1 through 3, 5, 7, 8, 10, 14 through 16, 22, 23, 26 through 28, and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hitz in view of Siddha.

Claims 6 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hitz in view of Siddha and Brady.

Claims 9 and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hitz in view of Siddha and West.

Claims 12, 13, 24, 25, 33, and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hitz in view of Siddha and Grummon.

Throughout the opinion, we make reference to the Brief (received September 11, 2006), the Reply Brief (received December 26, 2006), and the Answer (mailed November 1, 2006) for the respective details thereof.

ISSUES

Appellants contend that the Examiner's rejection of claims 1 through 3, 5, 7, 8, 10, 14 through 16, 22, 23, 26 through 28, and 30 under 35 U.S.C. § 103(a) is in error. Appellants assert that modifying Hitz with the teaching of Siddha as suggested by the Office action would change the principle operation of Hitz. Appellants reasons that:

Hitz teaches that the system described therein operates because the WAFL system always writes new data to an *unused disk location* rather than to the *currently used location*. It is respectfully submitted that modifying Hitz according to Siddha as suggested in the Office

Action to write new data to the *currently used location* and coping the old data to an *unused disk location* would counteract the storage efficiencies that the Hitz system is meant to provide. As mentioned above, Hitz specifically states that because WAFL *always* writes new data to unused disk locations, the snapshot tree does not change even though the active file system does.

(Brief. 12 – 13). Appellants provide further rationale to support this argument on pages 3 through 13 of the Reply Brief.

The Examiner responds in the Answer, stating:

The Appellants make much of the fact that the Hitz reference discloses that "Because WAFL always writes new data to unused disk locations, the snapshot tree does not change even though the active file system changes." (see col. 18, lines 30-32).

This fact, however, has nothing to do with the feature of the Hitz invention that constitutes the improvement over the prior art, and is in fact the principle of operation of the system. The improvement and principle of operation has to do with the fact that each snapshot of the Hitz system requires only a single inode to be created, and thereafter requires the duplication of only those data blocks which have been modified. This is in contrast to the prior art, where a second copy of the entire inode file as well as copies of all indirect blocks are required for the creation of a snapshot.

(Answer 8). Further, the Examiner finds that modifying Hitz with Siddha's copy-on-write scheme would not require substantial reconstruction.

(Answer 9). Additionally, the Examiner finds that the performance of either method of copy-on-write scheme is exactly the same. (Answer 10).

Thus, the issue before us is whether it would have been obvious to modify the system of Hitz such that in response to a write of new data to a section of storage, the data existing in the section of storage is first copied to another section of storage, and then the data written to the section of storage as recited in the independent claims.

PRINCIPLES OF LAW

Our reviewing court has said “[A] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be lead in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend upon the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference’s disclosure is unlikely to be productive of the result sought by the applicant.” *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994) (*citing United States V. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966)). However, a reference that “teaches away” does not *pre se* preclude a prima facie case of obviousness, but rather the “teaching away” of the reference is a factor to be considered in determining unobviousness. *Id* 27 F.3d at 552, 31 USPQ 2d at 1132.

FINDINGS OF FACT

1. Hitz teaches a method for maintaining consistent states of a file system. (Abstract).
2. Hitz uses a system that is block based which uses inodes to describe files. (Col. 5, ll. 50-60).
3. Hitz’s system takes a snapshot of the file system. The snapshot is a read only copy of the system at any given point of time. The Snapshot makes use of a snapshot inode that refers to exactly the same blocks as the system file at the time the snapshot is taken. (Col. 17, l. 65-col. 18, l. 23).
4. Subsequent modifications to the data file are written to unused disk portions, and the system inode files are updated

accordingly whereas the snapshot inode tree does not change and it refers to the blocks of disk space where the unmodified existing data remains. (Col. 18, ll. 24- 39, see also example shown in figure 18 A-C and described in col. 18-19).

5. The system is consistent at all times. (Col. 20-15-31).
6. Hitz repeatedly states that the system does not overwrite data but writes to unused blocks of the disk. By not overwriting the disk is kept in a self-consistent state. (Col. 11, l. 65- col. 12, l. 9, col. 19, ll. 18-33, col. 20, ll. 4-6, col. 23, ll. 35-37).
7. Siddha teaches a method of taking snapshots of data to maintain a data backup. (Abstract, and first paragraph under heading 1.1).
8. Siddha teaches that the method of taking snapshots uses a copy on write system. Before a block is modified, the contents of the block are copied to a block at another location and then the block is overwritten with the changed data.
(Second and third paragraph under heading 1.1 and figure 1).

ANALYSIS

We find that the Examiner erred in holding that it would have been obvious to modify Hitz such that in response to a write of new data to a section of stored data, the data existing in the section is first copied to another section, and then the data is written to the section. Claim 1 recites “in response to a write of new data to a section of the stored data pointed to by a pointer of the table of the virtual storage area, copying the section of stored data to a section of the at least one other storage area prior to the

write, causing a pointer of the virtual storage area to point to the section of the at least one other storage area, and writing the new data to the section of the stored data.” Thus, the scope of claim 1 includes that before a write is made to a section of a stored data, the data currently in the section is copied to another section, and then the new write is made to the section (i.e. the data in the section is overwritten). Claim 1 also recites that there are pointers which point to the another section. Independent claims 14 and 26 recite limitations which include similar operations.

As discussed above Hitz teaches a method to maintain a consistent state of a file system. (Fact 1). As the Examiner identifies, one of the problems in the prior art, which creates a clone (complete duplicate) of the data on the file system is that it uses of a lot of storage space. (Col. 4, ll. 21-33). However, we find that one of the principle purposes of Hitz is to maintain a consistent state of the data, which is in part accomplished by never overwriting data. (Fact 6). While copying existing data to an unused section of a disk and then writing data to the section of the existing data, such as taught by Siddha, may create a snapshot similar to that taught by Hitz, this method of making a snapshot involves overwriting data. Hitz, in numerous instances states that overwriting data is avoided. We consider that given Hitz’s teachings one skilled in the art would be lead away from modifying Hitz to overwrite data. We find no teaching in Siddha that would suggest to the skilled artisan that Hitz’s teaching of not overwriting data should be ignored. Thus, we do not find that modifying Hitz’s method to permit overwriting data would have been an obvious modification. Accordingly, we will not sustain the Examiner’s rejection of independent claims 1, 14, and 26.

The Examiner's rejections of dependent claims 2 through 3, 5 through 13, 15, 16, 22 through 25, 27, 28, 30, and 32 through 34 all rely upon Siddha to teach modifying Hitz's method to permit overwriting data. The Examiner has not found, nor do we find, that the additional references cited in the rejections of the dependent claims teach modifying Hitz's method to permit overwriting data. Accordingly, we will not sustain the Examiner's rejections of claims 2 through 3, 5 through 13, 15, 16, 22 through 25, 27, 28, 30, and 32 through 34 under 35 U.S.C. § 103(a).

CONCLUSION

We consider the Examiner's rejections of claims 1 through 3, 5 through 16, 22 through 28, 30, and 32 through 34 under 35 U.S.C. § 103(a) to be in error, as we do not find that the combination of applied references teaches or suggests the limitations in independent claims 1, 14 and 26 and their dependents.

ORDER

For the foregoing reasons, we will not sustain the Examiner's rejections under 35 U.S.C. § 103. The decision of the Examiner is reversed.

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REVERSED

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