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MPG, LLP AND SANDISK
710 LAKEWAY DRIVE SUITE 200
SUNNYVALE, CA 94085

EXAMINER	
MERCADO, RAMON A	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte IDAN ALROD and ERAN SHARON

Appeal 2012-011472
Application 12/276,344
Technology Center 2100

Before ROBERT E. NAPPI, JASON V. MORGAN, and JOSEPH P. LENTIVECH, *Administrative Patent Judges*.

LENTIVECH, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants[1] seek our review under 35 U.S.C. § 134(a) of the Examiner's Final Rejection of claims 1–30, the only claims pending in the application on appeal. App. Br. 11. We have jurisdiction over the pending claims under 35 U.S.C. § 6(b).

We reverse.

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[1] The real party in interest is SanDisk Corporation. App. Br. 3.

STATEMENT OF THE CASE

Appellants' Invention

Appellants' invention generally relates to storing control metadata in flash-memory systems. Spec. 1, ll. 8–9. Claim 1, which is illustrative, reads as follows (some paragraphing added):

> 1. A method for storing data, the method comprising the steps of:
>
> (a) receiving data to be stored in a memory that includes a plurality of blocks,
>
> wherein each block from the plurality of blocks has at least one block metadata value associated with said each block,
>
> said block metadata value being dependent upon a writing time of said each block;
>
> (b) grouping said plurality of blocks into block groups,
>
> wherein at least one block group contains at least two blocks;
>
> (c) associating a group metadata value with each block group; and
>
> (d) associating each group metadata value with each block in a respective block group,
>
> wherein each block from the plurality of blocks does not store a dedicated copy of said block metadata value, and
>
> each block utilizes the group metadata value instead of the block metadata value.

References

The Examiner relies on the following prior art in rejecting the claims:

Sinclair	US 2005/0144357 A1	June 30, 2005
Gorobets et al. (hereinafter "Gorobets")	US 2006/0039196 A1	February 23, 2006

Rejections

Claims 1–30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sinclair and Gorobets. App. Br. 11; Ans. 4–11.

Rather than repeat the arguments here, we refer to Appellants' Appeal Brief ("App. Br." filed May 9, 2012) and Appellants' Reply Brief ("Reply Br." filed August 6, 2012) for the positions of Appellants and the Final Office Action ("Final Act." mailed November 28, 2011) and the Examiner's Answer ("Ans." mailed July 3, 2012) for the positions of the Examiner.

ANALYSIS

CLAIM 1

Dispositive Issue

The dispositive issue presented by Appellants' contentions is as follows:

Did the Examiner err in finding the combination of Sinclair and Gorobets teaches or suggests "associating a group metadata value with each block group" and "associating each group metadata value with each block in a respective block group," as recited in claim 1?

The Examiner finds Sinclair discloses grouping memory cells into erase blocks and that each erase block includes a sector of data. Ans. 16 (citing Sinclair ¶ 55 and Fig. 2). The Examiner further finds Sinclair discloses that the sector of data includes parameters indicating voltage levels to be used for programming and/or erasing the erase block. *Id.* at 5 (citing Sinclair ¶ 55). The Examiner also finds Sinclair teaches logically linking erase blocks to form metablocks. *Id.* at 15. The Examiner further finds Sinclair teaches storing overhead data, included in a sector of data, in an erase block dedicated to storing overhead data. Final Act. 3 and Ans. 16 (both citing Sinclair ¶ 58). As such, the Examiner finds

> it would be obvious to one of ordinary skill in the art at the time the invention was made to further extend the overhead organization shown at the erase block level to the metablock. That is, assigning all the overhead data (metadata) of all the erase blocks in a metablock to a dedicated block of the metablock.

Final Act. 3.

Additionally, the Examiner finds Gorobets teaches a scrub operation for reducing the corruption of data which occurs over time as a result of shifting threshold levels caused by charge disturbing programming, reading, or erasing operations performed in neighboring memory cells. Ans. 17 (citing Gorobets ¶¶ 13, 15). The Examiner concludes, therefore, it would have been obvious "to extend Sinclair [sic] method to include Gorobets' threshold levels (V_t), a quantity that shift[s] as a result of charge disturbing programming in the neighboring or other related memory cells, pages or blocks." *Id.* (citing Gorobets ¶ 13).

Appellants contend the combination of Sinclair and Gorobets does not teach or suggest a group metadata value. App. Br. 13–15; Reply Br. 3–7. Appellants argue that even if Sinclair's overhead organization for erase blocks was extended to Sinclair's metablock, it would not disclose or suggest a group metadata value that was associated with each block in the block group. Reply Brief 5. Appellants argue that even if Sinclair's overhead organization for erase blocks was extended, each block would be associated with its own metadata value—i.e., a block metadata value—and not a group metadata value that is associated with each block in the block group. *Id.* Appellants further contend that Gorobets' threshold levels do not disclose or suggest a group metadata value associated with each block group. Ans. 17. Appellants argue that Gorobets' threshold levels merely disclose properties of memory devices and that Gorobets is silent regarding a group metadata value. *Id.*

We find Appellants' contentions persuasive. We disagree with the Examiner because, on this record, we find no teaching or suggestion that a group metadata value, associated with each group, is associated with each block in the group. Sinclair discloses each erase block is associated with overhead data that includes parameters for the erase block. Sinclair ¶¶ 56–58. Sinclair further discloses logically linking a group of erase blocks to form a metablock. *Id.* ¶ 63. Sinclair, however, does not teach or suggest associating the metablock with a group parameter or overhead data value that is associated with each erase block included in the metablock. Instead, Sinclair teaches that each erase block is associated with its own group parameter or overhead data value. *See* Sinclair ¶ 58. Further, Gorobets discloses that the charge level of a storage element controls the threshold

voltage of its memory cell and that the charge levels shift as a result of charge disturbing programming, reading, or erasing operations performed in neighboring or related memory cells, pages, or blocks. Gorobets ¶ 13. The Examiner's findings do not persuasively show that Gorobets, even in combination with Sinclair, teaches or suggests associating a group threshold voltage with each block group. Therefore, the Examiner's findings do not persuasively show the combination of Sinclair and Gorobets teaches or suggests associating a group metadata value with each group, as recited in independent claims 17, 12, 19, and 23–30.

We do not reach Appellants' further allegations of error because we find the issue discussed above to be dispositive of the rejection of independent claims 1, 7, 12, 19, and 23–30 and, therefore, dependent claims 2–6, 8–11, 13–18, and 20–22 which depend variously from claims 1, 7, 12, and 19.

CONCLUSION

On the record before us, we conclude the Examiner has erred in the rejection of claims 1–30 under 35 U.S.C. § 103(a).

DECISION

As such, we REVERSE the Examiner's rejection of claims 1–30 under 35 U.S.C. § 103(a).

REVERSED

msc