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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte YOONG CHERT FOO, SALIL SAHASRABUDHE, and ANDREW DAVY

Appeal 2018-008359
Application 15/047,466[1]
Technology Center 2600

Before MARC S. HOFF, JOHN A. EVANS and JASON J. CHUNG, *Administrative Patent Judges*.

HOFF, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from a final rejection of claims 1–4, 6–11, and 13.[2] We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

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[1] Appellants state that the real party in interest is Imagination Technologies Limited. App. Br. 1.

[2] Claims 5 and 12 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Final Act. 2.

Appellants' invention is a method and system for multisample antialiasing that enables memory bandwidth to be conserved. For each of one or more pixels, it is determined whether all or a plurality of sample areas of a pixel are located within a particular primitive. If all the sample areas of a pixel are located within that primitive, a value is stored in a multisample memory for a smaller number of the sample areas of that pixel than the total number of the sample areas of that pixel, and data is stored indicating that all the sample areas of that pixel are located within that primitive. Abstract.

Claim 1 is exemplary of the claims on appeal:

> 1. A method for generating three dimensional computer graphics images using multisample antialiasing by sequentially processing a plurality of primitives for at least a first pixel which is divided into a plurality of sample areas, the method comprising:
>
> processing a first primitive, by
>
> storing, when all the sample areas of the first pixel are located within said first primitive, a value for the first primitive in a multisample memory for a smaller number of the sample areas of the first pixel than the total number of the sample areas of the first pixel, and storing data indicating that all the sample areas of the first pixel are located within the first primitive; and
>
> subsequently processing a second primitive, by
>
> comparing, when not all the sample areas of the first pixel are located within said second primitive, the sample areas of the first pixel located within the second primitive with the sample areas of the first pixel in which the first primitive value is stored, and
>
> writing, when the only sample areas of the first pixel not located within the second primitive are sample areas for which the value of the first primitive has been stored, to the multisample memory the value of the second primitive for each sample area of the first pixel located within the second primitive for which the value of the first primitive is not stored.

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

Foran	US 5,684,939	Nov. 4, 1997
Iourcha	US 2009/0256848 A1	Oct. 15, 2009
Jiao	US 2009/0073168 A1	Mar. 19, 2009

Claims 1–4, 6, 9–11, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Foran.

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Foran and Iourcha.

Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Foran and Jiao.

Throughout this decision, we make reference to the Appeal Brief ("App. Br.," filed March 15, 2018), the Reply Brief ("Reply Br.," filed August 15, 2018), and the Examiner's Answer ("Ans.," mailed June 15, 2018) for their respective details.

ISSUE

Appellants' arguments present us with the following issue:

Does Foran teach or suggest storing a value for a first primitive in a multisample memory for a smaller number of the samples of the first pixel than the total number of the sample areas of the first pixel?

ANALYSIS

CLAIMS 1–4, 6, 9–11, AND 13

Independent claims 1 and 6 requires that when all the sample areas of the first pixel are located within said first primitive a first primitive value is stored for a smaller number of the sample areas of the first pixel than the total number of the sample areas of the first pixel. Independent claim 13 requires "determining whether all sample areas of said first pixel were located within a processed first primitive, the value of which is stored in a multisample memory for less than all sample areas of the first pixel."

The Examiner finds that Foran teaches that it is an "important aspect of the present invention" that "there is no *requirement* that the color values assigned to a pixel or a region be stored with a particular supersample[3] . . . since the frame buffers can *also* be used to store color values." Ans. 4–5; Foran col. 10:65–11:8 (emphasis added). The Examiner further finds that

[3] A "region" in Foran is "those supersample representations having common polygon coverage within that pixel." Ans. 4; Foran col. 6:18–20. Supersampling increases "the number of data samples that are taken at or around each pixel location corresponding to a portion of the image to be displayed, and then combining the resulting values of these multiple data samples to obtain a final display value for each pixel location." Foran col. 1:37–41.

this section impliedly teaches that color values *may*, optionally, be stored with a particular supersample. Ans. 5.

We do not agree with the Examiner's finding. The cited portion of Foran relied upon by the Examiner teaches that a single value is maintained for each region corresponding to the samples which are covered by a single polygon. App. Br. 11; Foran col. 10:50–54. We agree with Appellants' argument that Foran thus teaches that no value for the first primitive is stored for the samples themselves. *Id.* Appellants further argue, and we agree, that Foran teaches that coverage mask 40 (Figure 2B) is set to "1" for each sample area covered by a single polygon (or a common set of polygons, in blended mode). Reply Br. 3. Coverage mask 40 is associated with a color value that is stored in color buffer. *Id.*; Foran col. 10: 44–54.

The Examiner finds that "Foran does not *expressly* disclose, *in exact words*, that the single, representative color value is stored in a sample area as opposed to somewhere else." Ans. 4. Even if we interpret the Examiner's inference regarding Foran, cited *supra*, as an argument that Foran inherently teaches storing one or more color values in a sample area, the Examiner has only established the *possibility* of such storage. "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (citations and internal quotation marks omitted).

We find that Foran does not teach or suggest all the limitations of independent claims 1, 6, and 13. Accordingly, we do not sustain the Examiner's § 103(a) rejection of claims 1–4, 6, 9–11, and 13 over Foran.

CLAIMS 7 AND 8

Claims 7 and 8 depend from independent claim 6, the rejection of which we do not sustain, supra. We have reviewed Iourcha and Jiao, and we agree with Appellants that they do not remedy the deficiencies of Foran. App. Br. 12. Therefore, we do not sustain the § 103(a) rejection of claim 7 over Foran and Iourcha, and the § 103(a) rejection of claim 8 over Foran and Jiao, for the reasons given *supra* with respect to independent claim 6.

NON-STATUTORY OBVIOUSNESS-TYPE DOUBLE PATENTING

Appellants' arguments concerning the Examiner's now-withdrawn non-statutory obviousness-type double patenting rejection of claims 1–13 over claims 1–5 and 9–15 of U.S. Patent No. 9,275,492 are considered moot in view of Appellants' Terminal Disclaimer filed June 30, 2017.

CONCLUSION

Foran does not teach or suggest storing a value for a first primitive in a multisample memory for a smaller number of the samples of the first pixel than the total number of the sample areas of the first pixel.

ORDER

The Examiner's decision to reject claims 1–4, 6–11, and 13 is reversed.

REVERSED