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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TOSHIYASU SUGIO, TAKAHIRO NISHI,
YOUJI SHIBAHARA, KYOKO TANIKAWA,
HISAO SASAI, TORU MATSUNOBU, and
KENGO TERADA

Appeal 2018-009129
Application 14/533,151
Technology Center 2400

Before JENNIFER S. BISK, LARRY J. HUME, and
JULIET MITCHELL DIRBA, *Administrative Patent Judges*.

DIRBA, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Appellants² seek our review under 35 U.S.C. § 134(a) of the Examiner's rejection of claims 1–14, which are all claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ This Decision uses the following abbreviations: “Spec.” for the original specification, filed November 5, 2014, claiming priority to earlier filed applications; “Final Act.” for the Final Office Action, mailed November 16, 2017; “Br.” for Appellants’ Appeal Brief, filed May 25, 2018; and “Ans.” for Examiner’s Answer, mailed July 5, 2018. Appellants elected not to file a Reply Brief.

² According to Appellants, the real party in interest is Sun Patent Trust. Br. 3.

BACKGROUND

Appellants' disclosed embodiments and claimed invention relate to a moving picture encoding and decoding method. Spec., Abstract.

Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A moving picture encoding method for encoding a moving picture per block, the moving picture encoding method comprising:
 - generating a prediction image of a current block to be encoded, using a reference block that is adjacent to the current block or included in a reference picture different from a current picture to be encoded, and generating a prediction residual which is a difference between the current block and the prediction image;
 - determining whether to apply horizontal and vertical transformation to the prediction residual or to apply none of the horizontal and vertical transformation to the prediction residual;
 - performing the transformation on the prediction residual according to a result of the determining, to derive transform coefficients;
 - performing quantization on the transform coefficients to derive quantized coefficients;
 - encoding a transform skip flag indicating the result of the determining; and
 - encoding the quantized coefficients either in a first scan order when the result of the determining indicates to apply the horizontal and vertical transformation or a second scan order when the result of the determining indicates to apply none of the horizontal and vertical transformation, the second scan order being different from the first scan order.*

Br. 11 (Claims App'x) (emphasis added).

THE REJECTION

Claims 1–14³ stand rejected under 35 U.S.C. § 103 as obvious over Sato (US 2011/0103485 A1, published May 5, 2011); Mrak Article (Marta Mrak et al., *Transform Skip Mode*, Proposal for the Joint Collaborative Team on Video Coding, Document: JCTVC–F077_r1 (July 14–22, 2011)); Bross (*High Efficiency Video Coding (HEVC) Text Specification Draft 7*, Draft of HEVC for the Joint Collaborative Team on Video Coding, Document: JCTVC–I1003_d2 (May 7, 2012)); and Mrak Patent⁴ (GB 2492333 A, published January 2, 2013). Final Act. 6–40.

ANALYSIS

We review the appealed rejections for error based upon the issues identified by Appellants and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential). To the extent Appellants have not advanced separate, substantive arguments for particular claims, or other issues, such arguments are waived. 37 C.F.R. § 41.37(c)(1)(iv).

We have considered all of Appellants' arguments and any evidence presented. Appellants argue claims 1–14 as a group. *See* Br. 7–9. Therefore, consistent with the provisions of 37 C.F.R. § 41.37(c)(1)(iv), we

³ Although the heading of the rejection only lists claims 1 and 14 (Final Act. 6), the other claims were addressed in the body of the rejection (*see id.* at 11–35), as recognized by Appellants (Br. 7). Accordingly, we consider the Final Office Action's reference to claims "1 and 14" to be a typographical error that should have referenced claims "1–14."

⁴ Although the Examiner and Applicant refer to this reference by the inventor's first name (i.e., Marta), we refer to this reference by the inventor's last name (i.e., Mrak) according to standard practice.

limit our discussion to claim 1. Independent claims 7, 13, and 14 and dependent claims 2–6 and 8–12 stand or fall with claim 1. We highlight and address specific findings and arguments for emphasis in our analysis below.

Claim 1 recites: “encoding the quantized coefficients either in *a first scan order* when the result of the determining indicates to apply the horizontal and vertical transformation or *a second scan order* when the result of the determining indicates to apply none of the horizontal and vertical transformation, *the second scan order being different from the first scan order.*” Br. 11 (Claims App’x) (emphasis added) (referred to in this Decision as the “disputed limitation”).

The Examiner found the disputed limitation would have been obvious in light of Sato, Bross, the Mrak Article, and the Mrak Patent. Final Act. 4–5, 8–10. The Examiner found Sato teaches encoding the quantized coefficients in a scan order and the Mrak Article and Patent teach determining whether to apply the horizontal and vertical transformation. *Id.* at 8–9 (citing Sato ¶¶ 74, 208; Mrak Article at 2, Abstract; Mrak Patent, Abstract). In particular, the Mrak Article and Patent teach selecting between: (1) a 2D transform, which applies a horizontal and vertical transformation, and (2) no transform, where “both horizontal and vertical transforms” are skipped. Mrak Article at 2. For the first and second scan orders, the Examiner found “[t]he cited references teach multiple different types of scan order” (e.g., Bross teaches eight types of scan order), and as a result, it would have been obvious “to apply one of these scan orders for the first scan order . . . and another scan order for the second scan order.” Final Act. 5. In particular, the Examiner pointed to Sato’s raster scan order as the claimed “first scan order” and the Mrak Article’s zig-zag scanning as the

claimed “second scan order.” Final Act. 5 (citing Sato ¶ 208; Mrak Article at 3).

Appellants argue the Mrak Article and Patent teach use of “the same type of scanning order, zig-zag, . . . in both the case of [2D] transform and no transform.” Br. 7–8. As a result, because claim 1 requires “the second scan order [to be] different from the first scan order,” Appellants contend these references fail to teach or suggest the disputed limitation. *Id.* at 8. With regard to the other references, Appellants simply state, “Sato, and Bross clearly fail to disclose” the disputed features. *Id.* at 9.

In response, the Examiner contends that Appellants attack the references individually and fail to address the teachings of Sato and Bross. Ans. 40–41. The Examiner also notes that, contrary to Appellants’ argument, the Final Office Action found Sato’s raster scan order—not Mrak’s zig-zag scan order—teaches the claimed “first scan order.” *Id.* at 40. With regard to the first and second scan orders, the Examiner states:

[T]he Office action cites several references to demonstrate that there are many well-known scan orders that have been used in video coding. Therefore, it is obvious to one with ordinary skills in the arts that one of these scan orders, which is different than the first scan order (i.e. in raster scan order) [Sato: para. 0208], can be used in case of the transform skip mode (i.e. when no transformation is performed on the video data) to further reduce the computational complexity, hence improve the performance of the encoding and decoding process.

Id. at 44 (emphasis omitted) (second alteration in original). The Examiner also further finds it would have been obvious to apply Bross’s z-scan order to the no transform block (to satisfy the claimed “second scan order”) because “Bross indicates that the z-scan order is typically used for a small block,” a “4x4 transform skip block” is a small block, and Sato notes the

importance of improving “coding efficiency without increasing computational complexity.” *Id.* at 53 (citing Bross at 1, 11; Sato ¶ 32). Appellants opted to not file a Reply Brief responding to these factual findings and rationale.

Appellants’ arguments do not persuade us of Examiner error because they fail to address the rejection as articulated. Although we agree with Appellants that the Mrak Article discloses use of zig-zag scanning for both the 2D transform and the no transform modes (Mrak Article at 3), the Examiner did not rely on the Mrak Article to teach “the second scan order [is] different from the first scan order” (Final Act. 5, 8, 9–10). Rather, the Examiner found the references teach a variety of scan modes and it would have been obvious to a person of ordinary skill in the art to combine Mrak’s determination of transform mode with Sato’s raster scan order and Bross’s other types of scan orders so that the resulting combination uses a “second scan order” that is different from the first. Final Act. 5; Ans. 44, 52–54.

Appellants do not identify error in the Examiner’s findings or rationale. For example, Appellants identify no errors or inaccuracies in the Examiner’s factual findings or rationale, do not contend the Examiner’s proposals are beyond the level of skill of one of ordinary skill in the art, and do not submit that the combination of references would yield undesirable, unpredictable, or unexpected results. In fact, Appellants do not respond to the Examiner’s obviousness rationale. Consequently, Appellants have not shown error in the Examiner’s findings or ultimate conclusion as to obviousness. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (If an examiner presents a prima facie case, “the burden of coming forward with evidence or argument shifts to the applicant.”)

Therefore, based upon the findings above, on this record, we are not persuaded of error in the Examiner's reliance on the cited prior art combination to teach or suggest the disputed limitation of claim 1, nor do we find error in the Examiner's resulting legal conclusion of obviousness. Accordingly, we sustain the Examiner's obviousness anticipation rejection of independent claim 1 and grouped claims 2–14, which fall therewith.

DECISION

We affirm the Examiner's decision rejecting claims 1–14.

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). *See* 37 C.F.R. § 41.50(f).

AFFIRMED