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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ZHUANGFEI WU and THOMAS RUSERT¹

Appeal 2017-008385
Application 13/996,280
Technology Center 2400

Before JEAN R. HOMERE, JEREMY J. CURCURI, and
DAVID J. CUTITTA II, *Administrative Patent Judges*.

CUTITTA *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Final Rejection of claims 15–28, all the pending claims in the present application.² *See* Appeal Br. 2. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Appellants name Telefonaktiebolaget LM Ericsson as the real party in interest. *See* Appeal Br. 2.

² Claims 1–14 are cancelled. *See* Appeal Br. 2.

STATEMENT OF THE CASE

Invention

The present invention relates to transforming Multi-view Video Coding (“MVC”) video data to H.264/AVC Advanced Video Coding (“AVC”). *See Spec.* ¶ 9.³

Exemplary Claims

Claims 15, 19, 23, 25, 27, and 28 are independent claims. Claims 15 and 23 are exemplary and are reproduced below:

15. A method for transformation of a bit stream from Multi-view Video Coding (MVC) to Advanced Video Coding (AVC) in a video handling entity, the method comprising:

obtaining an MVC bit stream comprising multiple views;
identifying reference information in the MVC bit stream;
and

modifying the reference information, such that the MVC bit stream is transformed into an AVC bit stream comprising multiple views, thereby enabling at least two of said views comprised in the AVC bit stream to be decoded by use of an AVC decoder, wherein said modifying the reference information comprises at least one of the following:

changing the order of reference picture indicators in a reference picture list associated with at least one of the pictures in at least one of the multiple views, and

³ This Decision refers to: (1) Appellants’ Specification filed June 20, 2013 (“Spec.”); (2) the Final Office Action (“Final Act.”) mailed January 14, 2016; (3) the Appeal Brief (“Appeal Br.”) filed November 17, 2016; (4) the Examiner’s Answer (“Ans.”) mailed March 16, 2017; and (5) the Reply Brief (“Reply Br.”) filed May 15, 2017.

changing a Picture Order Count (POC) syntax element in a slice header to correspond to an order of appearance of the pictures from the different views in the AVC bit stream.

23. A method for reversed transformation of a bit stream from AVC to MVC in a video handling entity, the method comprising:

obtaining an A VC bit stream comprising multiple views;
identifying reference information in the A VC bit stream;
determining whether the prediction structure of the A VC bit stream can be applied to MVC; and,

when a prediction structure of the AVC bit stream can be applied to MVC, modifying the reference information, such that the AVC bit stream is transformed into an MVC bit stream comprising multiple views, thereby enabling at least two of said views comprised in the MVC bit stream to be decoded by use of an MVC decoder, wherein said modifying the reference information comprises at least one of the following:

changing the order of reference picture indicators in a reference picture list associated with at least one of the pictures in at least one of the multiple views, and

changing a Picture Order Count (POC) syntax element in a slice header to correspond to an order of appearance of the pictures from the different views in the MVC bit stream.

REFERENCES

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

Pandit et al. ("Pandit")	US 2009/0268816 A1	Oct. 29, 2009
Koo et al. ("Koo")	US 2010/0266042 A1	Oct. 21, 2010
Chen et al. ("Chen")	WO 2008/047303 A2	Apr. 24, 2008
Hannuksela et al. ("Hannuksela")	WO 2008/084424 A1	July 17, 2008

REJECTIONS

Claims 15–22 and 27 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over the combination of Hannuksela and Chen. Final Act. 5–9.

Claims 23–26 and 28 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over the combination of Hannuksela, Chen, and Pandit. Final Act. 10–15.

Our review in this appeal is limited only to the above rejections and the issues raised by Appellants. Arguments not made are waived. *See* Manual of Patent Examining Procedures (MPEP) § 1205.02; 37 C.F.R. §§ 41.37(c)(1)(iv), 41.39(a)(1).

ANALYSIS

Rejection under § 103 (a) of Claims 15–22 and 27

Issue: Did the Examiner err in finding the combination of Hannuksela and Chen teaches or suggests “changing the order of reference picture indicators in a reference picture list associated with at least one of the pictures in at least one of the multiple views,” as set forth in claim 15?

Appellants note Chen teaches changing the order of reference picture indicators, as claimed, but argues “[w]hile Chen therefore describes reordering reference pictures in an AVC reference picture list, this reordering relates to truncation for buffer management and has nothing to do with transformation of a bit stream from AVC to MVC (or from MVC to AVC).” Appeal Br. 10. Appellants further argue “Chen does not describe reordering a reference picture list of an MVC bit stream in a way so that it can be decoded by an AVC decoder” *Id.*

We refer to, rely on, and adopt the Examiner’s findings and conclusions set forth in the Office Action and Answer. *See* Final Act; 5–6; Ans. 15–19. Our discussion here will be limited to the following points of emphasis.

In response to Appellants’ arguments, the Examiner finds “[e]ven though the explanation of reordering reference picture lists in Chen from paragraphs 0014 to 0023 is with respect to AVC streams, the disclosure of Chen would enable one of ordinary skill in the art to extend these practices to MVC streams as well.” Ans. 15–16. The Examiner further finds Hannuksela teaches transforming MVC bit streams to AVC bit streams by modifying reference information. Final Act. 5 (citing Hannuksela ¶ 22). We agree with the Examiner.

Appellants’ arguments do not take into account what the collective teachings of the prior art would have suggested to one of ordinary skill in the art and are therefore ineffective to rebut the Examiner’s conclusion of obviousness. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981)(the test for obviousness is “what the combined teachings of the references would have suggested to those of ordinary skill in the art.”) (citations omitted). This reasoning is applicable here because Appellants primarily argue that features are missing from one reference when the Examiner is relying on the other reference for such features, e.g., Appellants argue Chen’s modifying reference information by changing the order of reference picture indicators “has nothing to do with transformation of a bit stream from AVC to MVC” (Appeal Br. 10, emphasis omitted) when the Examiner relies on Hannuksela to teach modifying the reference information, such that the MVC bit stream is transformed into an AVC bit stream, as claimed. That is, the Examiner

relies on Hannuksela to teach transforming a bit stream from AVC to MVC by modifying reference information and relies on Chen to teach a specific form of modifying reference information that includes changing the order of reference picture indicators. *See* Final Act. 5–6. The Examiner further finds “the explanation of reordering reference picture lists in Chen” would enable one of ordinary skill in the art to extend these practices to MVC streams “[e]ven though the explanation of reordering reference picture lists in Chen . . . is with respect to AVC streams.” Ans. 15.

Thus, we find Appellants’ arguments unpersuasive because Appellants fail to take into account what the collective teachings of Hannuksela and Chen would have suggested to one of ordinary skill in the art.

Appellants further argue it would not have been obvious to modify Hannuksela in view of Chen because “Chen’s paragraph 13 appears to suggest that an AVC decoder should be able to use the `nal_ref_idc` to determine whether an NAL unit of an MVC stream is relevant or not for reconstruction of sample values.” Appeal Br. 12. “If this teaching of Chen is used to modify the teaching of Hannuksela, which is that an NAL header can be modified, the combined system of Hannuksela and Chen merely modifies the `nal_ref_idc` of the NAL header.” *Id.*

We are not persuaded because Appellants fail to provide evidence that the Examiner relies on the `nal_ref_idc` syntax element discussed at paragraph 13 of Chen in rejecting claim 15. Rather, the Examiner relies on Chen for its teaching of reordering reference picture indicators in a reference picture list. Final Act. 6 (citing Chen ¶¶ 20, 21, 33; Ans. 16).

Appellants' contentions are premised on a "physical" or "bodily" incorporation of limitations of one reference into the other. However, this is not the standard. *See In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."). The relevant inquiry is whether the claimed subject matter would have been obvious to those of ordinary skill in the art in light of the *combined teachings* of those references. *See Keller*, 642 F.2d at 425. "Combining the *teachings* of references does not involve an ability to combine their specific structures." *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973). Rather than express obviousness as the physical incorporation of a structure from one reference into the structure of another reference, the prior art should be viewed as a combination of teachings from different sources, and the use of those teachings by one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007) (the conclusion of obviousness can be based on the interrelated teachings of multiple patents.)

Here, the Examiner has found actual teachings in the prior art and has provided a rationale for combining the teachings, namely that it would have been obvious to "modify the invention disclosed by Hannuksela to add the teachings of Chen in order to control the required memory resources for decoding of conformant bitstreams." Final Act. 6 (citing Chen ¶¶ 25, 28, 29). We, therefore, determine the Examiner's obviousness conclusion is based on sufficiently articulated reasoning that is rational and supported by evidence drawn from the record.

Appellants argue "Koo does not bridge the gap between the teachings of Hannuksela and the teachings of Chen." Appeal Br. 17. We find this

argument unpersuasive because do not agree with Appellants' premise that there is a gap between the teachings, as discussed above.

Appellants argue “[t]he introduction of Koo . . . [in the Advisory Action mailed April 21, 2016] constitutes a new ground of rejection.” Appeal Br. 14. This issue, however, is a petitionable matter, as opposed to an appealable matter, and therefore is not before us. *See* 37 C.F.R. § 1.113.

Accordingly, we sustain the Examiner's 35 U.S.C. § 103 (a) rejection of claim 15. We also sustain the Examiner's § 103 (a) rejection of independent claims 19 and 27, which are argued with independent claim 15 for similar reasons. *See* Appeal Br. 17. Dependent claims 16–18 and 20–22 are either not argued separately or are nominally argued separately and fall with their respective independent claims. *See* Appeal Br. 18.

Rejection under § 103 (a) of Claims 23–26 and 28

Issue: Did the Examiner err in concluding it would have been obvious to combine the teachings and suggestions of Hannuksela, Chen, and Pandit in the manner recited in claim 23?

Appellants argue the Examiner “fails to explain why or how a person of ordinary skill in the art would combine Hannuksela's mention of MVC to AVC conversion with Pandit's teaching of AVC to MVC transcoding and then with Chen's AVC reference list reordering for a DPB [decoded picture buffer].” Appeal Br. 19.

Appellants' argument that the combination lacks the required motivation is not persuasive because Appellants do not specifically address the motivations identified by the Examiner, but merely assert the motivations lack explanation. *See* Final Act. 11, 12.

We refer to, rely on, and adopt the Examiner's findings and conclusions set forth in the Answer. *See* Ans. 19–20. The Examiner finds, and we agree, that Hannuksela teaches “obtaining an AVC bit stream comprising multiple views.” Final Act. 10 (citing Hannuksela ¶ 22). The Examiner finds, and we agree, that the secondary reference Pandit teaches the known technique of “determining whether the prediction structure of the AVC bit stream can be applied to MVC” and “modifying the reference information, such that the AVC bit stream is transformed into an MVC bit stream comprising multiple views, thereby enabling at least two of said views comprised in the MVC bit stream to be decoded by use of an MVC decoder” (Final Act. 10), which may be combined with the teachings of Hannuksela “to provide high-quality video content service or high speed service at a user request.” Final Act. 11. The Examiner finds, and we agree, that the tertiary reference Chen teaches the known technique of “changing the order of reference picture indicators . . . in a reference picture list” (Final Act. 12), which may be combined with the teachings of Hannuksela because “the disclosure of Chen would enable one of ordinary skill in the art to extend these practices to MVC streams as well” (Ans. 18).

The Examiner has found actual teachings in the prior art and has provided a rationale for the combination. That is, for the combination of Hannuksela and Pandit the Examiner indicates

[i]t would have been obvious to the person having ordinary skill in the art to modify the invention disclosed by Hannuksela to add the teachings of Pandit in order to provide high-quality video content service or high speed service at a user request. This video transcoding scheme may be useful when a user device only supports a certain video codec, or when an amount

or speed of data to be transmitted has to be controlled according to a condition of a network.

Final Act. 11 (citing Pandit ¶¶ 31). Next, for the combination of Hannuksela and Chen the Examiner indicates “[i]t would have been obvious to the person having ordinary skill in the art to modify the invention disclosed by Hannuksela to add the teachings of Chen in order to control the required memory resources for decoding of conformant bitstreams.” Final Act. 12 (citing Chen ¶¶ 25, 28, 29).

Moreover, we determine that the teachings suggest that the combination involves the predictable use of prior art elements according to their established functions and Appellants do not provide persuasive evidence to the contrary. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results,” *KSR*, 550 U.S. at 416, especially if the combination would not be “uniquely challenging or difficult for one of ordinary skill in the art,” *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418). Accordingly, we determine the Examiner has provided sufficient motivation for modifying Hannuksela with the teachings of Pandit and Chen.

Appellants argue the Examiner’s reasoning is based on improper hindsight. Appeal Br. 19. We are not persuaded. Rather than using hindsight, the Examiner points to specific disclosures in the prior art that describe each of the limitations of Appellants’ claim 23. (*See* Final Act. 10–12.) The Examiner also articulates reasons having rational underpinnings for the proposed combination. *See* Final Act. 11, 12. We therefore find that the Examiner’s obviousness rejection is based on sufficiently articulated

reasoning that is rational and supported by evidence drawn from the record, and that overcomes any concerns about hindsight bias. *See KSR*, 550 U.S. at 416.

Accordingly, we sustain the Examiner's 35 U.S.C. § 103 (a) rejection of claim 23. We also sustain the Examiner's § 103 (a) rejection of independent claims 25 and 28, which are argued with independent claim 23 for similar reasons. *See Appeal Br. 19*. Dependent claims 24 and 26 are either not argued separately or are nominally argued separately and fall with their respective independent claims. *See Appeal Br. 19*.

DECISION

We affirm the Examiner's § 103 (a) rejections of claims 15–28.

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