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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SHINOBU HATTORI and TOSHIYA HAMADA

Appeal 2018-008389
Application 14/497,249
Technology Center 2400

Before JOSEPH L. DIXON, DAVID M. KOHUT, and
JON M. JURGOVAN, *Administrative Patent Judges*.

DIXON, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

Appellant¹ appeals under 35 U.S.C. § 134(a) from a final rejection of claims 21–27 and 34–46. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

The claims are directed to an image processing device and method that “can accurately reproduce a dynamic range of an image” using dynamic range characteristics information including a “value of the maximum white level . . . which is assigned to a developed image, and is set as

¹ We use the word “Appellant” to refer to “applicant(s)” as defined in 37 C.F.R. § 1.42. The real parties in interest are Saturn Licensing LLC, Sony Corporation, Thomson Licensing DTV, and Technicolor USA, Inc. (Appeal Br. 2.)

max_white_level_code_value” and a “value of a white level (white 100%) which is assigned to a developed image, and is set as white_level_code_value.” (Abstract.)

Independent claim 34, reproduced below, is illustrative of the claimed subject matter:

34. At least one non-transitory computer readable storage medium having stored thereon computer executable instructions, which, when executed by at least one processor, perform an image processing method, the method comprising:

decoding image data encoded in compliance with HEVC to produce decoded image data;

receiving dynamic range characteristic information associated with the encoded image data, the dynamic range characteristic information including camera iso sensitivity information indicating, as a percentage relative to a reference white level, a dynamic range of luminance of the encoded image data, wherein the percentage is greater than 100%, the dynamic range characteristic information indicating camera sensitivity at the time of capturing of an image, the maximum image white level information also including reference screen luminance information indicating a reference screen white level setting of the encoded image data, the reference screen white level setting being used for an image production process and having units of candela per square meter; and

adjusting a dynamic range of the decoded image data based upon the dynamic range characteristic information,

wherein the dynamic range characteristic information is tone mapping information defined in HEVC.

(Appeal Br. 12–16 (Claims Appendix).)

REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Kamon ("Kamon")	US 2008/0251695 A1	Oct. 16, 2008
Yamashita et al. ("Yamashita")	US 2008/0259181 A1	Oct. 23, 2008
Kobiki et al. ("Kobiki")	US 2012/0169796 A1	July 5, 2012
Knibbeler et al. ("Knibbeler")	US 2014/0210847 A1	July 31, 2014

REJECTION

The Examiner made the following rejection:

Claims 21–27 and 34–46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Knibbeler, Kobiki, Yamashita, and Kamon. (Final Act. 3–8.)

ANALYSIS

With respect to independent claims 21, 34, and 41, Appellant argues the claims together. (*See* Appeal Br. 4, 7; Reply Br. 2.) Based on Appellant’s arguments and our discretion under 37 C.F.R. § 41.37(c)(1)(iv), we select independent claim 34 as the representative claim for the group and will address Appellant’s arguments presented in both Appeal Brief and Reply Brief. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2017). Dependent claims 22–27, 35–40, and 42–46 stand or fall with representative claim 34. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Appellant contends the independent claims are not rendered obvious because (i) “the cited art does not disclose dynamic range characteristic

information being tone mapping information defined in HEVC,” and Knibbeler, in particular, “does not teach or suggest that either the maximum image white level information or the reference screen luminance information are included in tone mapping information defined in HEVC.” (Appeal Br. 7–8 (capitalization altered) (emphasis omitted); *see also* Reply Br. 2.)

Appellant further argues the cited art does not teach or suggest

(ii) “reference screen luminance information indicating a reference screen white level setting of the encoded image data,” (iii) “information indicating, as a percentage relative to a reference white level, a dynamic range of luminance of the encoded image data, wherein the percentage is greater than 100%,” and (iv) “camera iso sensitivity information indicating, as a percentage relative to a reference white level, a dynamic range of luminance of the encoded image data, wherein the percentage is greater than 100%,” as claimed (e.g., in claim 34). (Appeal Br. 8–10 (capitalization altered); *see also* Reply Br. 2–5.) In particular, Appellant argues with respect to issue (ii) that “Kobiki’s reference screen luminance [(brightness level chosen at the display)] is a characteristic of the display selected to compensate for brightness of ambient light” that “is completely independent of any encoded image data that is received.” (Appeal Br. 8; *see also* Reply Br. 2–4.) With respect to issue (iii), Appellant argues “Yamashita does not disclose [that] the image data for which the dynamic range is increased to 1200% at the intermediate step is encoded” and “[t]here is no reason provided in the record to encode the image data until the processing performed by the signal processing unit [of Yamashita] . . . is completed.” (Appeal Br. 8–9; *see also* Reply Br. 4–5.) And, with respect to issue (iv), Appellant argues Kamon’s ISO sensitivity is not “camera iso sensitivity information indicating, as a

percentage relative to a reference white level a dynamic range of luminance of the encoded image data, much less that the percentage is greater than 100%,” as claimed. (Appeal Br. 9–10; *see also* Reply Br. 5.)

Appellant’s arguments do not persuade us of error in the Examiner’s rejection, for the reasons described below.

Representative claim 34 recites the performance of an image processing method comprising “adjusting a dynamic range of the decoded image data based upon the dynamic range characteristic information [associated with the encoded image data]” with “the dynamic range characteristic information . . . [being] tone mapping information defined in HEVC.” (*See* Appeal Br. 13–14 (claim 34).) We agree with the Examiner that Knibbeler teaches and suggests these claim limitations. (Final Act. 3 (citing Knibbeler ¶¶ 16, 86, 96–97, 108, 121–134, 359, 388, Figs. 2–3); Ans. 8–9.) In particular, Knibbeler teaches

[a] *dynamic range transform* being performed in the image processing device 103 but being based on information received preferably both from the content provider apparatus 101 and the display 107. In this way, *the dynamic range transform (specifically a tone mapping algorithm) can be adapted to consider the characteristics of the tone mapping that was performed in the content provider apparatus 101 and to the specific luminance range of the display 107.* Specifically, the *tone mapping performed at the image processing device 103 can be dependent on the target display for which the tone mapping is performed at the content generation side.*

...

For example, for a relatively low complexity system, the content provider apparatus 101 may simply transmit an indication of the white point luminance of the target display for each the encoded image (video) that has been encoded. E.g., data may be communicated that indicates the number of nits available at the target display. The dynamic range transform can then adapt the

transformation based on the number of nits [(candela per square meter)]. For example, if the image processing device 103 is performing *a dynamic range transform to generate an output image for a 2000 nits display, the knowledge of whether the input image is tone mapped to a display of 500 nits or one of 1000 nits can be used to optimize the dynamic range transform performed at the image processing device 103.*

(See Knibbeler ¶¶ 121, 123 (emphases added).)² Appellant argues although Knibbeler mentions HEVC in paragraph 388, “paragraph 388 . . . does not disclose the dynamic range characteristic information is tone mapping information defined in HEVC,” while “paragraph 121 [describing tone mapping] of Knibbeler makes no mention of HEVC,” and thus, “Knibbeler does not teach or suggest the dynamic range characteristic information is tone mapping information defined in HEVC,” as claimed. (Reply Br. 2; Appeal Br. 7.) Appellant’s argument is not persuasive because Knibbeler’s paragraph 388 provides that image data may be encoded in accordance with the *HEVC encoding technique*, and it would have been known to the skilled

² We additionally note, it appears the Examiner did not appreciate the totality of the teachings of Knibbeler including Knibbeler’s description of a target display reference indicative of a dynamic range of a target display for which the encoded image is encoded—teaching and suggesting claim 34’s reference screen luminance information (Knibbeler’s target display reference information) indicating a reference screen white level setting of the encoded image data, the reference screen white level setting having units of candela per square meter. (See Knibbeler ¶¶ 109 (“The image signal furthermore comprises a target display reference which is indicative of a dynamic range of a target display for which the first encoded image is encoded,” where “the target display reference provides a reference for the encoded image which reflects the dynamic range for which the received image has been constructed”), 122–124 (“The target display reference may specifically include or be a white point luminance of the target display.”).)

artisan that *HEVC encoding* may provide *tone mapping information*.³ In addition, Knibbeler teaches that dynamic range information may be part of tone mapping information. (See Knibbeler ¶¶ 32–33, 121–123.)

Additionally, Appellant’s arguments, that the cited art does not teach dynamic range characteristic information including *maximum image white level information*, *reference screen luminance information*, and *camera iso sensitivity information* (see Appeal Br. 7–10, Reply Br. 2–5), do not show error in the Examiner’s rejection of the three process steps recited in claim 34. Particularly, Appellant’s arguments do not show error in the Examiner’s rejection because the different *types of “information”*—i.e., “camera iso sensitivity information indicating, as a percentage relative to a reference white level, a dynamic range of luminance of the encoded image data, wherein the percentage is greater than 100%,” “camera sensitivity at the time of capturing of an image,” and “maximum image white level information” including “reference screen luminance information indicating a reference screen white level setting of the encoded image data, the reference screen white level setting being used for an image production process and having units of candela per square meter” recited in claim 34—are simply different types of received data that does not reconfigure the claimed “receiving” and “adjusting” steps to perform different functions than those disclosed in the prior art. For example, Kamon teaches it is well-known to

³ For example, Appellant’s Specification explains that *tone mapping information* may be conventionally provided by *HEVC encoding*. (See Spec. ¶¶ 4–5 (“In a draft of HEVC at a current point of time, tone mapping information is transmitted in SEI (Supplemental Enhancement Information). . . . Content of this tone mapping information is the same as that standardized in AVC.”).)

inspect information such as “camera iso sensitivity,” and Knibbeler teaches “receiving dynamic range characteristic information” and “adjusting a dynamic range of the decoded image data based upon the dynamic range characteristic information,” as recited in claim 34. (See Knibbeler ¶¶ 16, 96–97, 121–134; Kamon ¶¶ 5–8, 51, 54–55; Final Act. 3–5.)

The different *types of information* received in claim 34 (i.e., “camera iso sensitivity information indicating, as a percentage relative to a reference white level, a dynamic range of luminance of the encoded image data,” a “percentage [that] is greater than 100%,” “camera sensitivity at the time of capturing of an image,” “maximum image white level information,” and “reference screen luminance information indicating a reference screen white level setting of the encoded image data”) are not being used by Appellant’s claimed method to adjust a dynamic range and, as such, the different *types of information* are not functionally related to Appellant’s claimed dynamic range adjustment. (See Appeal Br. 13–14 (claim 34).) These different *types of information* are considered nonfunctional descriptive material and, as such, do not distinguish Appellant’s claimed invention relative to the dynamic range transformation disclosed by Knibbeler. See *In re Gulack*, 703 F.2d 1381, 1385 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579 (Fed. Cir. 1994); *In re Ngai*, 367 F.3d 1336, 1338 (Fed. Cir. 2004).⁴

⁴ Relevant case law and our precedential decisions on the appropriate handling of claims that differ from the prior art only based on “nonfunctional descriptive material” include: (1) *Ex parte Nehls*, 88 USPQ2d 1883, 1889 (BPAI 2008) (precedential) (“[T]he nature of the information being manipulated does not lend patentability to an otherwise unpatentable computer-implemented product or process.”); (2) *Ex parte Mathias*, 84 USPQ2d 1276, 1279 (BPAI 2005) (informative) (“[N]onfunctional descriptive material cannot lend patentability to an

These different *types of information* are nonfunctional descriptive material in the claimed invention because this information does not reconfigure the receiving and dynamic range adjusting steps to perform a different function than that disclosed in the prior art of Knibbeler. More particularly, claim 34 does not indicate how the “camera iso sensitivity information,” “percentage [that] is greater than 100%,” “camera sensitivity at the time of capturing of an image,” “maximum image white level information,” and “reference screen luminance information indicating a reference screen white level setting of the encoded image data” are being used to perform any particular claimed step or function. (See Appeal Br. 13–14 (claim 34).) For example, the claimed “adjusting a dynamic range of the decoded image data based upon the dynamic range characteristic information” does not indicate *how the dynamic range adjustment would be influenced by the camera iso sensitivity information, percentage greater than 100%, camera sensitivity at the time of image capturing, maximum image white level information, or reference screen luminance information indicating a reference screen white level setting of the encoded image data.* (See Appeal Br. 13–14 (claim 34).) Claim 34 requires *adjusting* the decoded image data’s dynamic range *based upon the dynamic range characteristic information*, but the claim does not require particularly using the *camera iso sensitivity information, percentage greater than 100%, camera capturing*

invention that would have otherwise been anticipated by the prior art.”), *aff’d*, 191 Fed. Appx. 959 (Fed. Cir. 2006) (Rule 36); and, (3) *Ex parte Curry*, 84 USPQ2d 1272, 1274 (BPAI 2005) (informative) (“Nonfunctional descriptive material cannot render nonobvious an invention that would have otherwise been obvious.”), *aff’d*, No. 06-1003 (Fed. Cir. June 12, 2006) (Rule 36).

sensitivity, maximum image white level information, or reference screen luminance information when *adjusting* the decoded image data's dynamic range. Claim 34 also does not evidence a functional difference in *receiving* the claimed *camera iso sensitivity information, percentage greater than 100%, camera capturing sensitivity, maximum image white level information, and reference screen luminance information* in dynamic range characteristic information, versus receiving only *conventional tone mapping information*⁵ in the dynamic range characteristic information. The specific types of information (i.e., camera iso sensitivity information, percentage greater than 100%, camera capturing sensitivity, maximum image white level information, and reference screen luminance information) recited in claim 34 do not depend on the claimed dynamic range adjustment, and the dynamic range adjustment does not depend on the nature of the specific types of information claimed.

Therefore, because the claimed informational content (of camera iso sensitivity information, percentage greater than 100%, camera sensitivity at the time of image capturing, maximum image white level information, and reference screen luminance information) is not positively recited as being used to change or affect the steps of the method in claim 34 within the broad scope of Appellant's claim, such informational content is nonfunctional descriptive material, entitled to no weight in the patentability analysis because Appellant has not shown that the claimed information changes the three steps/functions recited in independent claim 34.

⁵ For example, Appellant's Specification explains that *tone mapping information* may be conventionally provided through *HEVC encoding* (see Spec. ¶¶ 4–5), and Knibbeler describes *tone mapping information* being used as *dynamic range information* (see Knibbeler ¶¶ 121, 123–124).

Thus, Appellant has not shown error in the Examiner's rejection of the steps recited in claim 34 and in the Examiner's factual findings or conclusion of obviousness based upon the teachings and suggestions of Knibbeler in combination with Kobiki, Yamashita, and Kamon.

Alternatively, we find that Appellant's claimed informational content of camera iso sensitivity information, percentage greater than 100%, camera capturing sensitivity, maximum image white level information, and reference screen luminance information in the dynamic range characteristic information is entitled to no weight in the patentability analysis. Therefore, the information listed above does not distinguish Appellant's image processing steps from the image processing performed by the prior art of Knibbeler. As a result, we agree with the Examiner that the Examiner's cited art is sufficient to support a prima facie obviousness rejection of claim 34.

Appellant's Briefs have not shown error in the Examiner's rejection of the steps recited in claim 34. Thus, we sustain the Examiner's decision in rejecting representative independent claim 34, grouped independent claims 21 and 41,⁶ and grouped dependent claims 22–27, 35–40, and 42–46 under 35 U.S.C. § 103(a).

⁶ In the event of any further prosecution, the Examiner should consider whether independent claim 41 (reciting a “non-transitory computer readable storage medium having stored thereon image data encoded in compliance with HEVC and dynamic range characteristic information associated with the encoded image data”) is directed to machine-readable media (e.g., disk or other memory) *merely serving as a support for information*. Such a claim is directed toward conveying meaning to the human reader rather than towards establishing a functional relationship between the recorded data on the disk, and a computer/processor. *See In re Ngai*, 367 F.3d at 1339 (“[w]here the printed matter is not functionally related to the substrate, the

CONCLUSION

The Examiner did not err in rejecting claims 21–27 and 34–46 based upon obviousness under 35 U.S.C. § 103(a).

DECISION

For the above reasons, we AFFIRM the Examiner’s obviousness rejections of claims 21–27 and 34–46 under 35 U.S.C. § 103(a).

In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
21–27, 34–46	103(a)	Knibbeler, Kobiki, Yamashita, Kamon	21–27, 34–46	

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

printed matter will not distinguish the invention from the prior art in terms of patentability” (quoting *In re Gulack*, 703 F.2d at 1385)).