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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SPREAD SPECTRUM SCREENING LLC

Appeal 2013-002808
Reexamination Control 90/011,392
Patent No. 5,689,623
Technology Center 3900

Before HOWARD B. BLANKENSHIP, STEPHEN C. SIU, and
STANLEY M. WEINBERG, *Administrative Patent Judges*.

WEINBERG, *Administrative Patent Judge*.

DECISION ON APPEAL

Patent Owner (Appellant), Spread Spectrum Screening LLC appeals under 35 U.S.C. § 134(b) from a final rejection of claims 1-21 of U.S. Patent No. 5,689,623 (the “623 patent”). We have jurisdiction under 35 U.S.C. §§134(b) and 306.

We affirm.

STATEMENT OF THE CASE

Reexamination Proceedings

A request for *ex parte* reexamination of the ‘623 patent was filed on December 16, 2010.

Related Litigation

The ‘623 patent was asserted in three patent infringement suits in *Spread Spectrum Screening LLC v. Eastman Kodak Co.*, No. 10-CV-06523 (W.D.N.Y.); *Spread Spectrum Screening LLC v. Continental Web Press, Inc. et al.*, No. 1:10-CV-1101 (N.D. Ill.); and *Spread Spectrum Screening LLC v. Dainippon Screen Graphics (USA), LLC, et al.*, No. 1:10-CV-07428 (N.D. Ill.). App. Br. 4.

The Rejections

Claims 1-15 and 17-19 stand rejected under 35 U.S.C. § 103(a) as obvious over Parker (PCT Patent Publication No. WO 1992/10905; June 25, 1992) in view of Victor Ostromoukhov, *Pseudo-Random Halftone Screening for Color and Black & White Printing*, The 9th International Congress in Non-Impact Printing Technologies, Proceedings pp. 579-582 (1993) (Ostromoukhov). Final Rej. 6-35.

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Claim 16 stands rejected under 35 U.S.C. § 103(a) as obvious over Parker, Ostromoukhov, and further in view of Moriguchi (US 4,809,063). Final Rej. 35-36.

Claims 1-9, 11, 13-15, 17, and 18 stand rejected under 35 U.S.C. § 103(a) as obvious over Parker in view of Ralph Levien, *Output Dependent Feedback in Error Diffusion Halftoning*, The Society for Imaging Science and Technology, IS&T 46th Annual Conference (1993). Final Rej. 36-47.

Claim 16 stands rejected under 35 U.S.C. § 103(a) as obvious over Parker in view of Levien and Moriguchi. Final Rej. 47-48.

Claims 1-7, 9, 11, 13-15, 17, and 18 stand rejected under 35 U.S.C. § 103(a) as obvious over Parker in view of Thomas Scheermesser, *Digital Halftoning With Texture Control*, Electronic Publishing, Vol. 63(3), pp. 207-212 (1993) (Scheermesser). Final Rej. 49-60.

Claim 16 stands rejected under 35 U.S.C. § 103(a) as obvious over Parker, Scheermesser, and Moriguchi. Final Rej. 60-62.

Claims 1 and 18 stand rejected under 35 U.S.C. § 103(a) as obvious over Parker, Scheermesser and further in view of Mark A. Schulze, *Blue Noise and Model-Based Halftoning*, Proc. SPIE Vol. 2179 Human Vision, Visual Processing, and Digital Display V, pp. 182-194 (1994) (Schulze). Final Rej. 62-66.

Claims 20 and 21 stand rejected under 35 U.S.C. § 103(a) as obvious over Parker and Ostromoukhov. Final Rej. 66.

Claims 20 and 21 stand rejected under 35 U.S.C. § 103(a) as obvious over Parker and Levien. Final Rej. 66-67.

All rejections based upon Ostromoukhov as the primary reference have been withdrawn. Final Rej. 5.

The Invention

The '623 patent relates to a screening mask used in commercial printing software. The invention uses "a halftone screen to produce a binary image." Abstract; Col. 1:5; col. 2:13-14; App. Br. 9:5-6.

The Claims

Independent claim 1 is illustrative showing paragraph numbers assigned to the limitations by the Examiner and with key disputed limitations emphasized:

- 1.0 1. A digital screening mask comprising:
- 1.1 a computer readable memory for storing data, wherein stored in the memory is a two dimensional array of optical density threshold values,
- 1.2 each value being in a range between a minimum value and a maximum value,
- 1.3 *wherein a frequency domain plot of said array of threshold values is characterized by a function in magnitude independent of angle within a band of frequencies between a minimum frequency and a maximum frequency,*
- 1.4 the minimum frequency normally being imperceptible to humans and
- 1.5 *the maximum frequency being a frequency within the ability of a printing press to print.*

The Expert Declaration

Appellant provides a Declaration by Daniel Lau, Ph.D.

ISSUE

The Examiner concludes that subsection 1.3 does not define or limit how wide the recited frequency band must be or what the maximum frequency can be. Final Rej. 8; Ans. 12:3-5. That is, there is no restriction

on frequency content that falls outside the band of frequencies. Ans. 5:9-10; 8:9-10. Based on that conclusion, the Examiner finds that Figure 1 of Parker teaches a frequency band between minimum and maximum frequencies.

Final Rej. 8; Ans. 11:12-14

Appellant argues that subsection 1.3 must be read to restrict frequency content to a band of frequencies (App. Br. 17:14-16; 18:10-12) which Parker does not teach because Parker shows significant frequency content outside the Examiner's arbitrarily designated maximum frequency in the Examiner's annotated version of Parker's Figure 1. App. Br. 22:17-21.

The issues, therefore, are

(1) whether subsection 1.3 limits the maximum frequency in the band of frequencies; and

(2) whether Parker teaches a band of frequencies between a minimum frequency and a maximum frequency.

ANALYSIS

Interpretation of subsection 1.3

Appellant and the Examiner disagree about the interpretation of the phrase "is characterized by" in subsection 1.3.

Appellant contends that, consistent with the Specification, "is characterized by" means "restricted in" or "substantially restricted to," or "limited to." App. Br. 17. Appellant cites, for example, Specification column 6, lines 38-44 which states: "the spread spectrum mask generated in step 28 is *restricted in* the frequency domain to *within* the spread spectrum band of frequencies." App. Br. 17. Based on this citation, and others (Spec. col. 4:39-44, 51-53; App. Br. 17), as well as its arguments during

prosecution (*id.*), Appellant contends that frequency content in the frequency domain is restricted to a band of frequencies so that subsection 1.3 is not satisfied if there is frequency content outside the band of frequencies. App. Br. 17. Appellant further contends that its interpretation is further supported by its annotated Figure 2 showing a band of frequencies between minimum and maximum frequencies that does not change with angle. App. Br. 18-19. If, according to Appellant, there is any significant frequency content outside Figure 2's donut-shaped band of frequencies, the limitation is not met. App. Br. 19. *See also* Reply Br. 5-6.

The credibility of Appellant's reliance on the preferred embodiment in its Specification (col. 4:51-52, cited at App. Br. 17 n. 8) is substantially reduced by the Specification's discussion of less preferred embodiments: "It is contemplated however that less preferred embodiments may include a tapering off of magnitude that extends *beyond* a designated spread spectrum band." Spec. Col. 4:53-55 (emphasis added). This less preferred embodiment substantially reduces the strength of Appellant's contention that its Specification unequivocally supports its interpretation of "is characterized by" to "restricted in," "limited to," or similar interpretations.

Citing MPEP 2111.03, the Examiner concludes that "characterized by" is an open ended transitional phrase which is synonymous with "comprising," "including," or "containing." Ans. 4. Appellant does not dispute that MPEP 2111.03 discusses these phrases. Appellant contends that the terms discussed in the MPEP are transitional phrases that transition from the preamble to the body of a claim. Because claim 1 uses the transitional word "comprising" between the preamble and the body of the claim, and uses "characterized by" in the body of the claim, Appellant contends that

“characterized by” is not a transitional word and should not be interpreted as equivalent to “comprising.” Reply Br. 4. Appellant also cites two definitions of “characterize” from a general purpose dictionary and contends that those definitions support its limited interpretation of “characterized by” in claim 1. Reply Br. 5.

Finally, Appellant notes that MPEP 2111.03 did not first appear in the MPEP until July 1996, a number of months after its application using the “characterized” claim language was filed on March 27, 1995. Reply Br. 4. This argument seems to imply, but does not expressly assert, that the chronological relationship between Appellant’s 1995 claim language and the July 1996 version of the MPEP prevents the Office from relying upon the MPEP’s equating “characterized by” with the breadth accorded other transitional phrases.

We note, however, that at least as early as January 1995, MPEP § 1824 reproduced PCT Rule 6.3 which stated, in part:

(b) . . . claims shall contain . . . (ii) a characterizing portion – preceded by the words “characterized in that,” “characterized by,” “wherein the improvement comprises,” or any other words to the same effect – stating concisely the technical features which, in combination with the features stated under (i), it is desired to protect.

The accompanying MPEP § 1824 comment stated:

As to the manner of claiming, the claims must, whenever appropriate, be in two distinct parts; namely, the statement of the prior art and the statement of the features for which protection is sought (“the characterizing portion”).

The discussions and guidance in PCT Rule 6.3 and in the MPEP take precedence over definitions in a general purpose dictionary.

Accordingly, when Appellant filed its application in March 1995, and during prosecution up until the '623 patent issued on November 18, 1997, Appellant was on notice that the Office did not accord "characterized by" the restrictive interpretation Appellant now seeks to engraft onto it and, instead, interpreted it as broadly as "comprising" and other transitional phrases. During the pendency of the '623 patent, Appellant could have amended claim 1 in light of the extant PCT and MPEP guidance to ensure the claim was limited to the desired frequency range.

We therefore agree with the Examiner that "is characterized by" is accorded a broad meaning and not the restrictive meaning sought by Appellant.

Application of Parker to subsection 1.3

The Examiner finds that Parker teaches a band of frequencies between a minimum frequency and a maximum frequency. *See* Final Rej. 8 and Ans. 11-12, both of which have an annotated copy of Parker's Figure 1 showing a band of frequencies having a maximum frequency and a minimum frequency.¹

Based upon Appellant's proposed restrictive interpretation of subsection 1.3, Appellant contends that Parker does not teach subsection 1.3 because Parker shows significant frequency content outside the Examiner's annotated maximum frequency line of Parker Figure 1 (App. Br. 22:11-21)

¹ The Examiner also relies upon Parker's Figures 7-9 as identifying two separate cutoff frequencies. Ans. 5-6, 8-9. Appellant disagrees, contending that those figures relate to the optical density threshold values recited in subsections 1.1 and 1.2. We agree with Appellant in view of the fact that the Examiner has previously equated Figures 7-9 with optical density threshold values. Final Rej. 7 discussing subsection 1.2.

and Parker does not mention or suggest anything about a maximum frequency or the elimination of high frequency content (App. Br. 23:10-12; 24:24-26). Appellant also contends that claim 1 requires that Parker's *entire* digital screening mask must be considered, rather than only the portion relied upon by the Examiner based upon the arbitrarily defined frequency band relied upon by the Examiner. Reply Br. 6-7. We disagree with Appellant because, as we showed above, subsection 1.3 does not require that Parker's entire mask be considered. In addition, no part of claim 1 includes the term "entire."

Appellant relies upon Dr. Lau's Declaration to show that one skilled in the art would say that Parker does not have a frequency domain within a band of frequencies between minimum and maximum frequencies because (1) Parker's frequency domain includes all the frequency content above a minimum frequency (App. Br. 22, citing Lau Declaration ¶ 17); (2) Parker cannot be compared to claim 1 because claim 1 refers to a dither array where Parker's Figure 1 is a power spectrum for a dither pattern (App. Br. 24, citing Lau Declaration ¶ 19); and (3) Parker teaches a blue-noise mask and blue-noise masks do not have a maximum frequency (Reply Br. 8:3-7, citing Lau Declaration ¶ 17). Dr. Lau's paragraph 17 also states that "[o]ne skilled in the art would recognize that the dither pattern of '905 PCT [Parker] is characterized by low and high frequencies including the flat high frequency area. One skilled in the art could not just ignore the high frequencies."

"[E]xtrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how an invention works, to ensure that the court's understanding of the technical aspects of the patent is consistent with

that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field.”

Phillips v. AWH Corp., 415 F.3d 1303, 1318 (Fed. Cir. 2005) (en banc).

However, “a court should discount any expert testimony ‘that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.’” *Id.*

Appellant’s reliance on Dr. Lau’s Declaration is not persuasive because it is clearly at odds with the claim construction mandated by claim 1 itself and the written description, as discussed above.

The remaining Reply Brief references to Dr. Lau’s Declaration are not directed to a discussion of Parker. They are, instead, directed to the fact that none of the secondary references eliminate all of Parker’s high frequency content beyond the arbitrarily chosen maximum frequency. (Reply Br. 7-8; 11).

Accordingly, we agree with the Examiner that Parker teaches subsection 1.3 of claim 1.

The rejection of subsection 1.5

Subsection 1.5 recites that the maximum frequency recited in subsection 1.3 is a frequency within the ability of a printing press to print. The Examiner rejects subsection 1.5 on various grounds using different combinations of references for each ground.

Parker in View of Ostromoukhov

The Examiner finds that Ostromoukhov teaches (1) clustering to improve printing performance by inherently removing high frequency features that may otherwise be difficult to print; and (2) the Fourier

amplitude spectrum shown in Ostromoukhov's Figure 4(b) inherently has a maximum frequency within the ability of the printing press to print. Final Rej. 10:7-14; Ans. 21.

Relying on Dr. Lau's Declaration regarding the shape of clusters in Ostromoukhov, Appellant argues that Ostromoukhov does not inherently disclose the Fourier amplitude spectrum has a maximum frequency within the ability of the printing press to print because Ostromoukhov's clustering does not necessarily *remove all* significant high frequency content; but only *reduces* some of the high energy frequency. App. Br. 26:15; 27-28.

In response, the Examiner concludes that subsection 1.5 does not recite removing high frequencies, high energy frequency, or anything related to frequencies above a maximum frequency (Ans. 19:6-7; 20:18-19, 22-25) and that Dr. Lau's discussion regarding the shape of clusters is not persuasive because neither Dr. Lau nor Appellant point out how cluster shapes are related to any claim limitations. Ans. 20:11-17. The Examiner also finds that Appellant's Specification teaches that clustering is a method that helps satisfy printing press requirements and that Ostromoukhov uses the same method. Ans. 19.

Appellant's Reply Brief does not address or counter the Examiner's analysis of subsection 1.5, Dr. Lau's Declaration, or the Examiner's finding regarding Ostromoukhov and its similarity to Appellant's device. We find that the Examiner's findings and conclusions have a rational underpinning and we are not persuaded the Examiner erred in reaching them.

Appellant also argues that Ostromoukhov fails to teach a digital screening mask,² where a frequency domain plot of the mask is restricted within a band of frequencies between minimum and maximum frequencies as in subsection 1.3. App. Br. 26:15-18; 28-30. Thus, even though this argument is purportedly about subsection 1.5, it is instead an argument about whether Ostromoukhov teaches subsections 1.0 and 1.3. However, as Appellant recognizes, “Parker was the only reference used in rejecting subsection 1.3 of claim 1. No other prior art was cited or combined with Parker for rejecting subsection 1.3 of claim 1.” Reply Br. 3:6-8. Consequently, Appellant’s contentions do not persuade us that Ostromoukhov fails to teach the limitation in subsection 1.5.

Appellant also argues that the rejection relies upon inappropriate hindsight and a strained interpretation of Ostromoukhov. App. Br. 26:18-19. This argument is not persuasive because it is based on previously made arguments regarding frequency domain plot, digital screening mask, a band of frequencies between minimum and maximum frequencies, removing high frequency components, and clustering (App. Br. 30-31) all of which we disagree with as discussed above.

For all of the above reasons, we are not persuaded of error in the Examiner’s rejection of subsection 1.5 over Parker in view of Ostromoukhov.

Parker in View of Levien

² The Examiner states: “[I]t appears that the Patentee is admitting that Ostromoukhov discloses a ‘mask’ after all, in spite of the Patentee’s previous argument that Ostromoukhov fails to teach a ‘mask.’” Ans. 24:26-28. We agree with Appellant (Reply Br. 10-11) that Appellant has not made such an admission.

Parker in View of Scheermesser
Parker in View of Scheermesser and Schulze

Appellant contests the rejections of subsection 1.5 based on Parker in view of Levien (App. Br. 35-38), in view of Scheermesser (App. Br. 42-43), and in view of Scheermesser and Schulze (App. Br. 46-47). The Examiner disagrees with Appellant's contentions based on findings and conclusions stated in the Answer regarding Levien (Ans. 33-40), Scheermesser (Ans. 42-44), and Scheermesser and Schulze (Ans. 46-49). Appellant's Reply Brief does not address or counter these findings and conclusions. We find that the Examiner's rejections of subsection 1.5 based upon these references are supported by articulated reasoning with some rational underpinning to justify the Examiner's obviousness conclusions.

We are therefore not persuaded that the Examiner erred in rejecting (1) representative claim 1; (2) claims 18, 20, and 21 for similar reasons; and (3) claims 6-11, 13-15, 17, and 19 not separately argued with particularity. Accordingly, we will sustain the Examiner's rejection of claims 1, 6-11, 13-15, and 17-21.

Claims 2-5, 12, 16, and 18

Appellant presents numerous arguments that the Examiner's rejections of claims 2 (App. Br. 31-32; 39; 43-44), 3 (App. Br. 32; 39; 44), 4 (App. Br. 32-33; 39-40; 44); 5 (App. Br. 33; 40; 44-45), 12 (App. Br. 33-34), 16 (App. Br. 48), 18 (App. Br. 34; 40; 45; 47) are erroneous. The Examiner disagrees with Appellant's contentions based on findings and conclusions stated in the Answer. Ans. 26-27; 40; 44 (claim 2); 27-28; 40; 44-45 (claim 3); 29; 40; 45 (claim 4); 29; 41; 45 (claim 5); 30-31 (claim 12); 49 (claim

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16); 31-32; 41; 45; 49 (claim 18). Appellant's Reply Brief does not address or counter the Examiner's findings and conclusions.

We find that the Examiner's rejections of claims 2-5, 12, 16, and 18 are supported by articulated reasoning with some rational underpinning to justify the Examiner's obviousness conclusions.

We are therefore not persuaded that the Examiner erred in rejecting claims 2-5, 12, 16, and 18.

Accordingly, we will sustain the Examiner's rejection of claims 2-5, 12, 16, and 18.

DECISION

The Examiner's decision to reject claims 1-21 is affirmed.

Extensions of time for taking any subsequent action in connection with this appeal are governed by 37 C.F.R. § 1.550(c). *See* 37 C.F.R. § 41.50(f).

AFFIRMED

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