UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ANDREW ARTHUR HUNTER

Appeal 2007-3107
Application 09/983,620
Technology Center 2600

Decided: February 11, 2008

Before JOSEPH F. RUGGIERO, JOHN A. JEFFERY, and KEVIN F. TURNER, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from the Examiner's rejection of claims 1-18, 28-33, and 35-44. Claims 19-27, 34, and 45-50 have been indicated as containing allowable subject matter (App. Br. 3). We have jurisdiction under 35 U.S.C. § 6(b). We reverse and enter new grounds of rejection under 37 C.F.R. § 41.50(b).

STATEMENT OF THE CASE

Appellant invented a method for processing input image data captured at a first resolution prior to display at a lower second resolution. Specifically, multiple sets of pixels are selected from an imaging matrix with at least three adjacent pixels. Each of the at least three pixels has a different constituent color. Each set of pixels is combined to form a respective single display pixel.[1] Claim 1 is illustrative:

> 1. A method of processing input image data captured at a first resolution prior to display at a second output resolution lower than said first resolution, the method comprising the steps of selecting from an imaging matrix of pixels of captured image data having the first resolution a plurality of sets of pixels such that many pixels of the image data having the first resolution are not selected, each of the sets comprising at least three pixels in said imaging matrix such that at least three pixels in each set are next to each other, each of said three pixels that are next to each other in a set being of a different constituent colour, and combining the pixels in each set of pixels to form a respective single display pixel.

The Examiner relies on the following prior art references to show unpatentability:

Parulski	US 5,493,335	Feb. 20, 1996
Debiez	US 6,473,062 B1	Oct. 29, 2002 (filed Mar. 22, 2000)

1. Claims 1-12, 17, 18, 28-33, and 35-44 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Parulski.

[1] *See generally* Spec. 3:15-6:20.

2. Claims 13-16 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Parulski and Debiez.[2]

Rather than repeat the arguments of Appellant or the Examiner, we refer to the Briefs and the Answer for their respective details. In this decision, we have considered only those arguments actually made by Appellant. Arguments which Appellant could have made but did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

OPINION

The Anticipation Rejection

We first consider the Examiner's rejection of claims 1-12, 17, 18, 28-33, and 35-44 under 35 U.S.C. § 102(b) as being anticipated by Parulski. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984); *W.L. Gore and Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554 (Fed. Cir. 1983).

The Examiner has indicated how the claimed invention is deemed to be fully met by the disclosure of Parulski (Ans. 3-5). Regarding the independent claims, Appellant argues that the pixel sample processing techniques shown in Figures 4 and 7 of Parulski do not combine pixels, let alone pixels of a different color. According to Appellant, the values of the

[2] The Examiner added an obviousness rejection of claims 15 and 16 over Parulski and Debiez in a new ground of rejection (Ans. 6-7).

circled pixels are merely stored in frame memory 62, but nothing in the reference indicates that the sampled pixels are combined (App. Br. 8-9).

Although Appellant acknowledges that Parulski in some embodiments averages (and therefore combines) pixels *of the same color*, Appellant emphasizes that these techniques do not average pixels having *different colors*. According to Appellant, Parulski maintains a particular pixel ratio (i.e., two green pixels for every red and blue pixel) using these techniques. This ratio, Appellant argues, could not be maintained if different color pixels were combined (App. Br. 9-10; Reply Br. 2-6).

The Examiner contends that the subsampling techniques of Figures 4 and 7 involve combining the green, red, and blue pixels as a color sampled pixel to form a respective single display pixel in low resolution (Ans. 7-8). With respect to the technique of Figure 7, the Examiner notes that the DSP decimates the original pixels of a stored image to generate a "quarter size" Bayer pattern image, and that each set of pixels includes three different primary colors (Ans. 8).

Regarding independent claims 17, 33, and 44, Appellant argues that Parulski does not disclose converting the sampled pixels into a second array as claimed. Rather, Parulski is said to arrange the sampled pixels into a staggered pattern (App. Br. 10). In response, the Examiner refers to Parulski's subsampling process shown in Figure 4 which stores only the values of the circled pixels in frame memory 62 (Ans. 8).

The issues before us, then, are (1) whether Parulski combines pixels of different colors to form a single pixel as claimed in the independent claims; and, (2) if so, whether Parulski forms a second array from these

single pixels as claimed in independent claims 17, 33, and 44. For the following reasons, we answer "no" to both of these questions.

Parulski discloses an electronic camera that enables two different resolution levels of sensor data to be stored in the device's frame buffer memory 26. In the low resolution mode, the buffer memory's timing is changed so that only a quarter of the pixels on the CCD sensor 28 are stored in memory 62. This quarter size image is then compressed by the DSP 64 and stored in flash EPROM memory 66 (Parulski, col. 5, ll. 52-63; Fig. 1).

To form the low resolution images, Parulski utilizes a "subsampling" pattern. One such pattern is shown in Figure 4 with a circle surrounding the sampled pixels that include red, green, and blue values. In this technique, only the values of these selected pixels are stored in frame memory 62 (Parulski, col. 6, ll. 4-21, 49-53; Fig. 4).

Alternatively, Parulski discloses a subsampling pattern that averages some of the pixels. In Figure 5, the circled green pixels are used directly and not averaged; adjacent pixels, however, are averaged. Regarding the averaged pixels, (1) the two horizontally adjacent red values are averaged to form a red pixel value, and (2) the two vertically adjacent blue values are averaged to form a blue pixel value (Parulski, col. 6, ll. 22-37; Fig. 5).

Since the subsampling pattern of Figure 5 can cause some luminance aliasing, the pattern of Figure 6 also averages the green values. In this arrangement, the four nearest green pixels in a "cross" shaped pattern in a first group 102 are averaged. For every second group 104 of four green pixels, the four nearest red pixels are averaged, and one-half the value of the center blue pixel is summed with one-half the average value of the two horizontally adjacent blue elements (Parulski, col. 6, ll. 37-46; Fig. 6).

All subsampling techniques shown in Figures 4 through 6 maintain a ratio of two green pixel values for every red or blue pixel value (Parulski, col. 6, ll. 46-48).

Based on this functionality, we do not find Parulski expressly or inherently combines pixels of different colors to form a single pixel as claimed. First, the subsampling technique of Figure 4 merely stores selected circled pixels from the array of pixels. Although the selected pixels are different colors, these pixels are simply not combined to form a single pixel as claimed.

Second, while the subsampling techniques of Figures 5 and 6 average (and therefore combine) certain pixels, the pixels that are averaged are the *same color* -- not a different color as required by the independent claims. In Figure 5, the two red values adjacent to the selected green value are averaged to form a red pixel value. Likewise, the two adjacent blue values are averaged to form a blue pixel value. But no averaging occurs between values of different colors to form an averaged multicolor value. The technique of Figure 6 has a similar deficiency in this respect since the averaging that occurs for each group 102, 104 is limited to pixels with the same color -- not a different color (Parulski, col. 6, ll. 39-46).

Furthermore, that these subsampling techniques in Parulski maintain a ratio of two green pixel values for every red or blue pixel value (Parulski, col. 6, ll. 46-48) only bolsters the conclusion that pixels of different colors are not combined to form a single pixel in Parulski, but rather maintained in the stated proportion.

We also find the Examiner's reliance on Figure 7 of Parulski unavailing essentially for the reasons noted by Appellant (Reply Br. 4-6).

Although Parulski indicates that a quarter size subsampling pattern is generated by the DSP "decimating" the original pixels, the Examiner has simply not shown -- nor can we find -- anything in Parulski that expressly or inherently combines different-color pixels to form a single pixel as claimed.

Lastly, regarding claims 17, 33, and 44,[3] although a staggered pattern of sampled pixels can certainly constitute an array of such pixels, nothing in Parulski discloses forming an array of pixels that are formed from the combined pixels of different color for the reasons noted above.

For the foregoing reasons, we will not sustain the Examiner's rejection of independent claims 1, 10, 17, 33, and 44 or the claims dependent thereon for similar reasons.

Regarding independent claims 31 and 42 which call for an apparatus for performing the methods of claims 17 and 30 respectively, we find no evidence on this record that Parulski's apparatus is capable of performing the specific steps recited in the method claims essentially for the reasons we noted previously.[4] Therefore, we will not sustain the Examiner's rejection of independent claims 31 and 42 and claims dependent thereon.

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[3] We note in passing that no antecedent basis exists for the limitation calling for "the second array" in independent claims 17, 33, or 44. We leave resolution of this issue to the Examiner and the Appellant.

[4] To avoid anticipation, apparatus claims must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78 (Fed. Cir. 1997). Thus, even if a prior art device is used for a different purpose, it will nevertheless anticipate the claim if it expressly or inherently contains all claimed structural features and is capable of performing the intended function. *See id.*

The Obviousness Rejections

Regarding the obviousness rejections of dependent claims 13-16 (Ans. 6-7), since we find that the disclosure to Debiez does not cure the deficiencies of Parulski noted above with respect to the independent claims, the obviousness rejections are also not sustained.

New Grounds of Rejection Under 37 C.F.R. § 41.50(b)

Under 37 C.F.R. § 41.50(b), we enter new grounds of rejection under 35 U.S.C. § 103 for claims 31, 32, 42, and 43.

Claims 31, 32, 42, and 43 are rejected under 35 U.S.C. § 112, first paragraph, as improper single means claims, or, alternatively, under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which Appellant regards as the invention.

Although independent claims 31 and 42[5] do not contain the word "means," they are nonetheless interpreted as means-plus-function claims under 35 U.S.C. § 112, sixth paragraph[6] because the term "apparatus" in these claims does not recite specific structure to perform the recited functions (i.e., the corresponding method steps recited in claims 17 and 30). The term "apparatus" is considered similar to a "means" under § 112, sixth

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[5] These claims are considered independent claims as they broadly recite an "[a]pparatus for performing the method" of claims 30 and 17 respectively. As such, these claims are in a different statutory class of subject matter than method claims 17 and 30 (i.e., they recite an apparatus, not a method).

[6] Means-plus-function claim language must be construed in accordance with 35 U.S.C. § 112, ¶ 6 by "look[ing] to the specification and interpret[ing] that language in light of the corresponding structure, material, or acts described therein, and equivalents thereof, to the extent that the specification provides such disclosure." *In re Donaldson Co., Inc.*, 16 F.3d 1189, 1193 (Fed. Cir. 1994) (en banc).

paragraph because it does not recite specific "structure, material, or acts in support thereof."[7]

Since there is only one recited "means" (the "apparatus") in independent claims 31 and 42, these claims are, in effect, single means claims that are improper under 35 U.S.C. § 112, first paragraph. In essence, these claims cover *every conceivable means* for achieving the desired result (i.e., implementing the methods of claims 17 and 30). The Specification, however, discloses only those means known to Appellant. *See In re Hyatt*, 708 F.2d 712, 714 (Fed. Cir. 1983).[8] Consequently, independent claims 31 and 42, as well as the dependent claims 32 and 43, constitute improper single means claims.

Alternatively, if claims 31, 32, 42, and 43 do not contain means-plus-function limitations, they are indefinite under 35 U.S.C. § 112, second paragraph as functional since there is no structure recited to perform the functions recited in claims 17 and 30. Although it is permissible to define an element in a claim by what it does,[9] there must be some structure in the

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[7] *See Ex Parte Ohashi*, 2001 WL 1149808 (BPAI 2001) (non-precedential), at *3 ("The term 'apparatus' is considered similar to a 'means' under § 112, sixth paragraph, because it does not recite 'specific structure, material, or acts in support thereof.'"); *see also Ex Parte Shih*, 2007 WL 1874813 (BPAI 2007) (non-precedential), at *3 (holding that a claim limitation calling for "a light source that produces light that is made of entangled photons" is a means-plus-function limitation due to the lack of structure that would perform the recited function).

[8] *See also* MPEP § 2164.08(a); *Ex Parte Borg*, 2002 WL 130550 (BPAI 2002) (non-precedential), at *3 (noting that while certain claims "did not recite even a single means, they are analogous to single means claims in that they recite neither a specific structure nor a combination of means").

[9] *See In re Swinehart*, 439 F.2d 210, 212 (CCPA 1971).

claim that performs the function. Mere functional recitations, without more, do not distinctly claim the invention.

DECISION

We have not sustained the Examiner's rejection of any of the claims on appeal. We have, however, entered a new grounds of rejection under 37 C.F.R. § 41.50(b) for claims 31, 32, 42, and 43 under 35 U.S.C. § 112, first paragraph, or, alternatively, under 35 U.S.C. § 112, second paragraph.

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b) which provides that "[a] new ground of rejection . . . shall not be considered final for judicial review."

Section 41.50(b) also provides that the Appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

> (1) Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .
>
> (2) Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

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).

REVERSED
37 C.F.R. § 41.50(b)

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