The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOSE ROBERTO ALVAREZ

Appeal No. 2004-0252
Application No. 09/439,920

ON BRIEF

Before KRASS, JERRY SMITH and BLANKENSHIP, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-5 and 7-41.

The invention is directed to converting interlace video signals into a down-conversion de-interlaced form suitable for use as higher-quality input for progressive input video encoding.

Representative independent claim 24 is reproduced as follows:

24. A method for determining intra-frame motion, comprising:

receiving interlaced video data including a current image-portion within a current-field of a current-frame of said interlaced video data;

forming an interpolation of said image-portion in accordance with data within a remaining field of said current-frame; and

comparing said image-portion with said interpolation.

The examiner relies on the following references:

Westerman	6,262,773	Jul. 17, 2001 (filed Sep. 15, 1997)
Igarashi et al. (Igarashi)	6,324,216	Nov. 27, 2001 (filed May 30, 1995)

Claims 24 and 27-30 stand rejected under 35 U.S.C. § 102(e) as anticipated by Westerman.

Claims 1-5, 7-23, 25, 26 and 31-41 stand rejected under 35 U.S.C. § 103 as unpatentable over Igarashi.

Reference is made to the briefs and answer for the respective positions of appellant and the examiner.

OPINION

Turning, first, to the rejection under 35 U.S.C. § 102(e), anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention. RCA Corp. v.

Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.), cert. dismissed, 468 U.S. 1228 (1984), citing Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

With regard to claim 24, appellant argues that since the examiner omitted claim 24 from a rejection of claims under 35 U.S.C. § 102(e), in the final rejection, there is no such rejection of claim 24. We disagree. The examiner may have inadvertently omitted this claim in the final rejection, but it is clear from the answer that claim 24 does, indeed, stand rejected under 35 U.S.C. § 102(e) and appellant certainly had an opportunity to respond to this rejection in the reply brief if, in fact, appellant had no inkling that this claim stood rejected on that ground.

Since it is clear that appellant knew that claim 24 stood rejected under 35 U.S.C. § 102(e) and, indeed, responded to that rejection in the principal brief, we find that there is an outstanding rejection of claim 24 under 35 U.S.C. § 102(e) and we will treat the rejection of the claim on its merits.

It is the examiner’s position that Westerman teaches receiving interlaced video data and converting it to progressive

video data at column 1, lines 6-10, while the reference teaches an interpolator at column 6, lines 26-39.

We will not sustain the rejection of claim 24 under 35 U.S.C. § 102(e) because, in our view, the examiner simply has not established a prima facie case of anticipation by merely pointing to 19 lines within the disclosure of Westerman and alleging that all of the claimed subject matter is disclosed therein.

Appellant does not argue much, but appellant does argue that Westerman is devoid of the step of, or means for, "comparing said image portion with said interpolation" and the examiner has not convincingly shown that Westerman does, indeed, disclose this subject matter. While Westerman mentions "interpolation" and an "interpolator" in the cited portions of the reference, we find no suggestion, at either column 1, lines 1-5, or column 6, lines 26-39, the only portions of Westerman cited by the examiner, of "comparing said image-portion with said interpolation," as required by the claim.

The only response by the examiner, at page 10 of the answer, is to assert that a subtraction step is a comparative step. Not only has the examiner not pointed to the specific portion of Westerman relied on for the "subtraction step," but, more

importantly, while a subtraction may also be a comparison, the examiner's explanation fails to explain how any subtraction step relied upon would entail a comparison of "said image-portion with said interpolation," as claimed. That is, the claim not only calls for a comparison, it calls for a comparison between two specific things, an "image-portion" and "said interpolation." The examiner has failed to explain how this is considered to be taught by Westerman.

Accordingly, the rejection of claim 24 under 35 U.S.C. § 102(e) is reversed. Moreover, since claims 27-30 also contain limitations directed to a specific comparison, and the examiner has not addressed how Westerman is seen to disclose the specifics of the comparisons claimed, we also will not sustain the rejection of claims 27-30 under 35 U.S.C. § 102(e). The examiner's reference to Westerman's column 6, lines 40-68, with regard to claims 28 and 30, and to column 6, lines 25-40, with regard to claim 29, is not seen to disclose the claimed comparisons.

We now turn to the rejection of claims 1-5, 7-23, 25, 26 and 31-41 under 35 U.S.C. § 103.

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of

obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). To reach a conclusion of obviousness under § 103, the examiner must produce a factual basis supported by a teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Our reviewing court requires this evidence in order to establish a prima facie case. In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). The examiner must identify the elements in the prior art or that knowledge generally available to one of ordinary skill in the art that would have led the individual to combine the relevant teachings of the references. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

As to independent claims 1 and 23, the examiner applies Igarashi as follows:

Column 3, lines 38-41, is said to “clearly” show the reception of interlaced video data.

Figure 3 is said to “clearly” show the detection of motion in blocks 21 and 22.

The output of Figure 3 is said to be “progressive video,” which the examiner alleges meets the claim language, “forming de-interlaced video data corresponding with said interlaced video data in accordance with said determined motion.”

The examiner explains that the forming of de-interlaced video is accomplished by combining frame data and field data of the interlaced video data (pointing to Igarashi, Figure 3 and column 16, lines 14-57). The examiner further explains that after selecting the most efficient means, i.e., frame or field motion detection, for processing the macro block, the macro block is processed and combined with previously encoded macro blocks to form the picture frame which is by definition de-interlaced video (pointing to Figure 10 of Igarashi, as well as column 10, lines 32-39).

The examiner appears to recognize that Igarashi does not teach the use of frame and field data together because the examiner states that:

> While Igarashi is clearly concerned with selecting which is the most efficient means, the motivation to combine the data is clearly taught. . . . it was well known that digital pictures were . . . made up of macro blocks [sic], Igarashi teaches that by processing each individual macro block in the most efficient manner, the picture that these macro blocks make up when combined, will be efficiently coded. Therefore[,] it would have been obvious . . . to modify the encoder as

> taught by Igarashi, to make the current invention [answer, page 3].

It is appellant's position, with regard to claims 1, 8-11, 16, 17, 23, 31, 36, 37 and 41, that while Igarashi teaches using field and frame data, Igarashi teaches that the field and frame data are used separately, while the instant claims require the **combination** of both field and frame data.

We understand the difference between the instant **disclosed** invention and that shown by Igarashi. However, taking instant claim 1 as exemplary of the Group I claims (grouped together by appellant with claims 8-11, 16, 17, 23, 31, 36, 37 and 41), as **claimed**, all that is called for is forming de-interlaced video data corresponding with said interlaced video data (which Igarashi clearly discloses) in accordance with said determined motion "by combining frame data and field data of said interlaced video data." Igarashi clearly discloses both frame data and field data of the interlaced video data, as shown in Figure 3 of the patent. Thus, the issue is whether Igarashi taught, or suggested, the **combination** of the frame data and field data, as presently claimed.

Since claim 1 is rather broad in scope, requiring, in our view, only that the de-interlaced video data be formed "by combining frame data and field data . . .," we agree with the

examiner that this is clearly suggested by Igarashi. This is so because, while it is true that Igarashi employs **either** field data **or** frame data, but not both, in determining the various macro blocks comprising a video, it is the combination of the macro blocks, which also entails a **combination** of field data and frame data (because some macro blocks will employ field data while other macro blocks will employ frame data, depending on which is more efficient in reducing temporal/spatial redundancy), which forms the de-interlaced video data, as reasonably explained by the examiner (answer, pages 10-11).

Thus, it appears that a broad, yet reasonable, reading of Igarashi does suggest a **combination** of field data and frame data in performing down-conversion de-interlacing.

Accordingly, we will sustain the rejection of claims 1, 8-11, 16, 17, 23, 31, 36, 37 and 41 under 35 U.S.C. § 103.

Turning to claim 2, this claim specifies that the image-portion "is a pixel." The examiner points to column 11, lines 22-39, of Igarashi for a teaching that the macro block data is comprised of pixel data.

Appellant argues that a pixel is not the same as a macro block and that Igarashi operates on a macro block, and not on an individual pixel (principal brief, page 14).

While it is true that a macro block is not a pixel, a macro block is certainly made up of pixels. Thus, it would have been clear to artisans that as macro blocks get smaller and smaller, they approach the size of a pixel and, ultimately, a macro block may comprise a pixel. Thus, the issue here is really what size macro block we are talking about. Artisans would have understood that the macro blocks of Igarashi may be as small as one pixel each, or larger. Accordingly, we find that it would have been obvious to the artisan that the macro blocks of Igarashi may be one pixel each in size. Appellant argues that Igarashi operates on macro blocks, not on pixels, but never explains why the macro blocks of Igarashi may not be one pixel in size, if desired.

Thus, we will also sustain the rejection of claim 2 under 35 U.S.C. § 103.

With regard to claim 4, this claim calls for the determining step to comprise “forming an intra-frame motion determination indicating intra-frame motion of said image portion."

The examiner contends that this is taught by Igarashi at column 15, lines 46-65, where both inter-frame and intra-frame motion detection are taught.

Appellant’s view is that the cited portion of Igarashi teaches that **previously encoded frames** are used as a basis for

determining motion, so that this portion of Igarashi teaches that motion determination is an **inter**-frame process, especially since Igarashi teaches that for I-pictures, which are related to **intra**-frame coding, “the detector is inoperative” (principal brief, page 18). Thus, concludes appellant, Igarashi does not teach “an *intra*-frame determination indicative of intra-frame motion,” as required by claim 4.

We will sustain the rejection of claim 4 under 35 U.S.C. § 103 because while appellant argues that Igarashi teaches motion determination being an “inter-frame process,” column 11, lines 10-11, of Igarashi clearly mentions that “[i]ntra-frame motion prediction is possible in the encoder of FIG. 4 . . .”

Thus, while the examiner has indicated what, in Igarashi, is relied on for the teaching of the claim 4 recitation, appellant has not convincingly pointed out the error in the examiner’s rationale. Accordingly, we will sustain the examiner’s rejection of claim 4 under 35 U.S.C. § 103.

With regard to claim 12, this claim calls for a step of correlating including “smoothing said combined motion indicator.” The examiner points to column 30, lines 24-51, of Igarashi for a teaching of calculating an overall motion by averaging the motion of all the macro blocks, and contends that such averaging of motion vectors “is considered smoothing since the vectors are averaged thus eliminating any anomalous vectors and therefore smoothing out the overall motion” (answer, paragraph bridging pages 11-12).

While appellant argues in the principal brief that Igarashi does not disclose the claimed “smoothing” at column 7, lines 33+, as well as in Tables 1 and 2, as previously argued by the examiner, appellant does not argue or dispute the examiner’s reasoning in the answer, based on column 30, lines 24-51, even though appellant filed a reply brief and had an opportunity to respond.

Accordingly, since there is no response from appellant to the examiner’s rationale for rejecting claim 12, as that rationale is stated in the answer, we will also sustain the rejection of claim 12 under 35 U.S.C. § 103.

Next, with regard to claim 15, reciting “amounts include a generally increasing relative amount of field data with

increasing motion," the examiner points to column 7, lines 44-49, of Igarashi for a teaching of field-based transformations being best for an area of a picture as a function of the amount of motion in the area. Therefore, concludes the examiner, "the more motion present the more data required to encode the picture" (answer, page 5).

Appellant argues that Igarashi merely uses an amount of motion "as a selection criteria for deciding whether to select field-based transformation or whether to select frame-based transformation" (principal brief, page 22).

We agree with the examiner that the artisan would have been well aware that the amount of field data required to represent motion is directly proportional to the amount of motion present, so that as the amount of motion increases, the amount of field data necessary will also increase.

Accordingly, we will sustain the rejection of claim 15 under 35 U.S.C. § 103.

Claim 26 requires processing a frame of video data such that vertical detail that might exist within an overlapping region of two fields of said frame, if present, is removed.

The examiner cites column 7, lines 33-45, of Igarashi and finds that "it would have been obvious to one of ordinary skill

in th art, to remove the overlapping regions so that no abrupt transitions are represented thereby reducing the amount of high frequency coefficient data" (answer, paragraph bridging pages 8-9). Further, the examiner mentions that while Igarashi does not teach removing the overlapping regions, Igarashi "does process the even fields separate from the odd fields in order to avoid the overlap" (answer, page 8).

By the examiner's own admission, Igarashi does not remove overlap regions, and, in fact, avoids the overlap. Yet, instant claim 26 indicates that an overlap region might exist and, if there is an overlapping region of two fields of the frame, any vertical detail, if present, is removed. Thus, the claim does not remove the overlap, but rather the vertical detail that might exist withing an overlapping region. Accordingly, the examiner's reliance on column 7, lines 33-45, of Igarashi is not persuasive.

However, at page 12 of the answer, the examiner further points to columns 29 and 30 of Igarashi where the reference does indicate that pairs of vertically adjacent rows are expected to be devoid of comb distortion (column 29, lines 31-33) and the examiner argues that comb distortion removal is shown in Igarashi's Figure 2. The examiner also points out (answer, page 12) that Igarashi reduces vertical detail by eliminating high

frequency coefficients, that this is known to mean the use of a low pass filter, and that this is just the way appellant performs the process. Accordingly, the examiner has set forth a reasonable basis for finding the claimed subject matter obvious and the burden shifted to appellant to rebut the examiner's case. Yet, appellant never responds to this reasoning in the reply brief. Accordingly, since, for whatever reason, we have no response from appellant, we will sustain the rejection of claim 26 under 35 U.S.C. § 103.

With regard to claim 32, appellant argues that the step of receiving comprises receiving activity metrics and the step of converting comprises processing the motion data in accordance with the activity metrics, but that the header of Igarashi, which the examiner relies on for a teaching of "activity metrics," is not applicable. Specifically, appellant argues that, in accordance with page 19 of the specification, activity metrics include, for example, "entropy, noise, frequency content, etc."

In our view, the examiner correctly points out that one cannot read limitations into the claims and that claim 32 does not require "entropy, noise, frequency content, etc." It merely requires "activity metrics." As the examiner reasonably explains, at pages 12-13 of the answer, activity metrics

> are simply instructions for the processor so that the processor knows how to deal with the data that follows. Therefore headers are synonymous to activity metrics because a header contains instructions and information necessary for dealing with subsequent data. Furthermore, Igarashi is replete with teachings of placing relevant information for the subsequent processing of received data in his header. See figure 21 as well as column 21 lines 1-24, and column 24 lines 23-47.

Since the examiner's rationale appears reasonable to us, and appellant has not responded to this rationale, e.g., the reply brief is silent on this matter, we will sustain the rejection of claim 32 under 35 U.S.C. § 103.

CONCLUSION

We have not sustained the rejection of claims 24 and 27-30 under 35 U.S.C. § 102(e) but we have sustained the rejection of claims 1, 2, 4, 12, 15, 26, and 32, along with the claims included in the groups into which appellant grouped these claims, under 35 U.S.C. § 103.

Accordingly, the examiner's decision rejecting claims 24 and 27-30 under 35 U.S.C. § 102(e) and rejecting claims 1-5, 7-23, 25, 26 and 31-41 under 35 U.S.C. § 103 is affirmed in part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

ERROL A. KRASS Administrative Patent Judge	)	
JERRY SMITH Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
HOWARD B. BLANKENSHIP Administrative Patent Judge	)	

EAK:clm

Scott A. Horstemeyer
Thomas, Hayden, Horstemeyer
& Risley LLP
100 Galleria Parkway
Suite 1750
Atlanta, GA 30339