

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. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES D. PARKER

Appeal No. 1998-2989
Application No. 08/566,987

ON BRIEF

Before BARRETT, RUGGIERO, and DIXON, **Administrative Patent Judges**.
DIXON, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-21, which are all of the claims pending in this application.

We AFFIRM-IN-PART and enter a new ground of rejection under 37 CFR § 1.196(b).

BACKGROUND

The appellant's invention relates to a method and apparatus for lossless precompression of binary images. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

1. A method, operating in an image processing system, for compressing a binary input image where the binary input image is represented as a regular array of binary image signals, comprising the steps of:

identifying an orthogonally shaped, two-dimensional region of binary image signals having the same state and a boundary encompassing the orthogonally shaped region;

determining the size of the orthogonally shaped region;

encoding the state and size of the orthogonally shaped region as a digital data word;

storing the digital data word representing the encoded shape and size in compression memory; and

repeating the above steps for each of a plurality of orthogonally shaped regions of binary image signals present within the binary input image, wherein at least one of the plurality of orthogonally shaped regions is generated by non-symmetrical division of a larger image region.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Cornyn, Jr. et al. (Cornyn)	4,484,081	Nov. 20, 1984
Keith et al. (Keith)	4,785,349	Nov. 15, 1988
Ghosh et al. (Ghosh)	5,163,104	Nov. 10, 1992
Stockholm	5,293,579	Mar. 08, 1994

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Bhargava et al. (Bhargava)	5,471,248	Nov. 28, 1995
Lund	5,650,858	Jul. 22, 1997 (filed Apr. 17, 1995)

Claims 1-3, 5-7, 12-14, and 21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bhargava. Claim 4 stands rejected under 35 U.S.C. § 103 as being unpatentable over Bhargava in view of Lund. Claim 8 stands rejected under 35 U.S.C. § 103 as being unpatentable over Bhargava in view of Ghosh. Claim 9 stands rejected under 35 U.S.C. § 103 as being unpatentable over Bhargava in view of Cornyn. Claims 10 and 11 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bhargava in view of Cornyn and Stockholm. Claims 15-18 and 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Ghosh in view of Keith. Claim 19 stands rejected under 35 U.S.C. § 103 as being unpatentable over Ghosh in view of Keith and Lund.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 11, mailed Jun. 22, 1998) for the examiner's reasoning in support of the rejections, and to the appellant's brief (Paper No. 10, filed Apr. 17, 1998) and reply brief (Paper No. 12, filed Jul. 27, 1998) for the appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art references, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations which follow.

With respect to claims 1-3, 5-7 and 12, appellant argues that Bhargava is directed to techniques of compression used to refresh the image thereby minimizing the amount refreshed. Appellant further argues that Bhargava is directed to multi-bit digital words representing color and that the rectangular tiling is with respect to where change has occurred. (See brief at page 15.) Appellant argues that the teachings of Bhargava have been mischaracterized and that the patent does not teach the application of coding techniques to binary image bitmaps and that Bhargava fails to teach partitioning based upon the common state of the binary pixels. **Id.** We agree with appellant that Bhargava does not explicitly teach these features as recited in claim 1, but note that the rejection is based upon obviousness and not anticipation. The test is what the teachings of Bhargava would have fairly suggested to one skilled in the art. Here, we agree with the examiner that it would have been obvious to skilled artisans to extend the teachings of Bhargava to the well known binary images. (See answer at page 5 and appellant's specification disclosing various publications concerning binary image coding and compression.) The examiner

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maintains that the methodology of Bhargava would have been obvious to skilled artisans to implement with binary images because the implementation would have used less memory and would have been faster to manipulate than gray scale representations. We agree with the examiner. Furthermore, with the implementation of the methodology of Bhargava to binary images there would not have been a variation in pixel values beyond the two values of 0 and 1. Therefore, the skilled artisan need not consider the intensity value difference between pixels and use of an average since there are only 2 values available. Therefore, it would have been readily apparent to skilled artisans that the groupings of pixels would have been based solely upon the common state of the binary pixels.

Appellant argues that the Office has inappropriately relied upon appellant's specification as a basis to modify the teachings of Bhargava. (See brief at page 16.) We disagree with appellant. The examiner has merely relied upon the recitation in the specification that various prior art references teach the application of compression to binary image data and that skilled artisans would have been motivated to apply the known methodology of Bhargava to binary image data. Furthermore, we note that the binary image data is a subset of the gray scale representation where only the two values are present. In this special case, the values of 0 and 1 would be coded and grouped based upon their common values.

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Appellant argues that the examiner's statement for the modification to Bhargava with respect to its application to binary image data is merely a conclusory statement and is not taught or suggested by Bhargava. We agree with appellant that Bhargava does not explicitly teach its application to binary image data, but, as noted above, we agree with the examiner that it would have been obvious to one of ordinary skill in the art at the time of the invention to extend the teachings of Bhargava to binary image data. Therefore, this argument is not persuasive, and we will sustain the rejection of independent claim 1 and its dependent claims 2, 3, 5-7 and 12.

With respect to claims 13, 14, and 21, appellant argues that the claims recite a lossless data compressor. As discussed above, with the application of the methodology of Bhargava to binary image data there would have been only two states for segmenting the larger image region and no averaging of data. Therefore, this precompression would have been a lossless process. Further, Bhargava discloses the encoding of the state and size of each region. In the background of Bhargava, it is disclosed that a two-step process is generally employed in which the compressed array of total information is further encoded into a compressed stream for transmission. (See Bhargava at col. 1, lines 40-50.) Bhargava further discloses that the compressed data is provided to an encode and transmit mechanism 50 (see Bhargava at columns 7-8) and also discloses the use of a Huffman encoder 120 in Fig. 12. The use of a Huffman encoder was a well known device

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for lossless transmission of data and Bhargava discloses the use of a buffer control 122 which would have controlled a buffer memory which would have been a precollation memory. (See answer at page 7.) Appellant argues that it is not apparent where the buffer control 122 is characterized as a precollation memory for the storage of compressed image data. We disagree with appellant wherein the buffer control would necessarily control a buffer memory which would have been a memory for storing the data. The language of claim 13 is quite broad whereas a buffer memory would have met the language of claim 13. Therefore, this argument is not persuasive, and we will sustain the rejection of claim 13 and its dependent claims 14 and 21.

With respect to claim 4, the examiner relies upon the combination of Bhargava and Lund. Appellant argues that while Lund teaches mapping a 300 dpi to 600 dpi image conversion, it is not indicated where either teaches or suggests the image compression of the bit replicated image. (See brief at page 17.) We disagree with appellant wherein Bhargava teaches the compression of an image, where the image may be of any resolution whether bit replicated or not. Therefore, we agree with the examiner that it would have been obvious to one of ordinary skill in the art at the time of the invention to use the methodology of Bhargava with bit replicated images as recited in the language of claim 4. Appellant argues that the examiner is reconstructing appellant's invention. (See brief at page 18.) We disagree with appellant, and we will sustain the rejection of claim 4.

With respect to claim 8, the examiner relies upon the combination of Bhargava and Ghosh to teach the use of the most significant bit as the state bit. The examiner relies upon the teachings of Ghosh with respect to the use of the MSB to store the state of the grouping of pixels. We agree with the examiner that in a binary image, there would have been a single bit to represent the state of the grouping of pixels. Appellant argues that Ghosh teaches away from the use of a single bit because it teaches the use of gray scale value after the bit indicating the sameness of the grouping. (See brief at page 19.) We disagree with appellant. Therefore, this argument is not persuasive, and we will sustain the rejection of claim 8.

With respect to claim 9, appellant argues that the combination of Bhargava and Cornyn does not teach or suggest the claimed steps of moving diagonally and backing up diagonally. (See brief at page 19.) We agree with appellant. The examiner admits that Bhargava does not teach this step of identifying the orthogonal region. The examiner relies upon the teachings of Cornyn and cites to columns 13 and 14. We disagree with the examiner. Cornyn merely teaches the comparison of prior adjacent pixels to a current pixel. The immediate left and immediate above pixels are used. Therefore, we disagree with the examiner that Cornyn suggests the use of diagonal movement, and we will not sustain the rejection of claim 9.

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With respect to claim 10, the examiner relies on the combination of Bhargava, Cornyn and Stockholm. Appellant argues that the examiner admits that Bhargava and Cornyn do not teach the column-wise and row-wise analysis of the pixels. (See brief at page 20.) The examiner disputes that there is an admission. (See answer at page 19.) Appellant argues that Stockholm discloses that the scanning of pairs of lines row-wise and pairs in the column-wise direction. We agree with appellant. While the examiner disputes that there is no admission as to Cornyn, the examiner has not provided any specific teaching or line of reasoning why it would have been obvious to one of ordinary skill in the art at the time of the invention to use row-wise and column-wise analysis of pixels to form a grouping of like valued pixels as recited in the language of claims 10 and 11. Therefore, we cannot sustain the rejection of claims 10 and 11.

With respect to claim 15, the examiner relies upon the teachings of Ghosh in view of Keith. We disagree with the examiner. In our view, the combination of Ghosh and Keith would not teach or suggest the invention as claimed because neither Ghosh nor Keith suggests the steps of identifying the orthogonally shaped regions with the common state as recited in step (a) and encoding the state and size of the orthogonally shaped region as recited in step (c). Therefore, we will not sustain the rejection of claim 15 and its dependent claims 16-20.

NEW GROUND OF REJECTION under 37 CFR § 1.196(b)

Claim 15 is rejected under 35 U.S.C. § 103(a) as unpatentable over Bhargava.

Due the similarity in claims 15-20 to claims 1-14, we do not see the examiner's rationale in not applying the teachings of Bhargava and Lund to the remainder of claims 15-20. As an example we will address claim 15 alone under 35 USC § 103(a) and leave it to the examiner's discretion to consider dependent claims 16-20.

As discussed above with respect to claims 1 and 13, the methodology of Bhargava applied to binary image data would have suggested the invention as recited in steps (a) - (f) to one of ordinary skill in the art at the time of the invention. Bhargava would have suggested the identification of orthogonal shaped regions with common state with binary image data. Bhargava discloses the determination and encoding of the dimensions or size of the region. The encoded shape and size would then be stored as a precompressed image and then the image would be compressed again when it is Huffman encoded for transmission.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1-8, 12-14 and 21 under 35 U.S.C. § 103 is affirmed and the decision of the examiner to reject claims 9-11 and 15-20 under 35 U.S.C. § 103 is reversed.

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In addition to reversing the examiner's rejection of claims 15-20, this decision contains a new ground of rejection of claim 15 alone pursuant to 37 CFR

§ 1.196(b)(amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53,131, 53,197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. & Trademark Office 63, 122 (Oct. 21, 1997)).

37 CFR § 1.196(b) provides, "A new ground of rejection shall not be considered final for purposes of judicial review."

Regarding any affirmed rejection, 37 CFR § 1.197(b) provides:

(b) Appellant may file a single request for rehearing within two months from the date of the original decision

37 CFR § 1.196(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 proceedings (37 CFR § 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .

(2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

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Should the appellant elect to prosecute further before the Primary Examiner pursuant to 37 CFR § 1.196(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejection, the effective date of the affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If the appellant elects prosecution before the examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejection, including any timely request for rehearing thereof.

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 - 37 CFR § 1.196(b)

LEE E. BARRETT)
Administrative Patent Judge)
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JOSEPH F. RUGGIERO
Administrative Patent Judge

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