

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 35

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YORAM BURAK,
RONEN NIZRY and
MENASHE BENJAMIN

Appeal No. 2004-0823
Application No. 09/555,391

HEARD: December 8, 2004

Before JERRY SMITH, RUGGIERO, and GROSS, Administrative Patent Judge.
JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1-30, 32-62 and 64-75. Claims 31 and 63 have been indicated to contain allowable subject matter.

The disclosed invention pertains to a method and apparatus for compressing a medical image.

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Representative claim 1 is reproduced as follows:

1. A method of compressing a medical image, comprising:
providing a medical diagnostic image, having associated therewith at least one windowing parameter;
automatically selecting by a computer of a desired compressed image quality, responsive to said at least one windowing parameter; and
compressing said image, using a lossy compression method, such that a decompressed image will have substantially said desired compressed image quality.

The examiner relies on the following references:

Collins et al. (Collins)	4,438,495	Mar. 20, 1984
Aravind et al. (Aravind)	5,214,507	May 25, 1993
Kapcio et al. (Kapcio)	5,263,099	Nov. 16, 1993
Ohhashi	5,305,204	Apr. 19, 1994
Carnahan	5,414,780	May 09, 1995
Novik	5,432,871	July 11, 1995
Ghaderi	5,438,633	Aug. 01, 1995
Resnikoff et al. (Resnikoff)	5,583,952	Dec. 10, 1996
Mason et al. (Mason)	5,668,998	Sep. 16, 1997
Yogeshwar et al. (Yogeshwar)	5,684,714	Nov. 04, 1997
Golin et al. (Golin)	5,694,531	Dec. 02, 1997
Liew et al. (Liew)	5,734,677	Mar. 31, 1998
Hsieh et al. (Hsieh)	5,761,333	June 02, 1998
Fang et al. (Fang)	5,835,618	Nov. 10, 1998
Mack et al. (Mack)	5,905,815	May 18, 1999
Ito	5,960,123	Sep. 28, 1999
Duso et al. (Duso)	5,987,621	Nov. 16, 1999
Demos	5,988,863	Nov. 23, 1999
Aharoni et al. (Aharoni)	6,014,694	Jan. 11, 2000
Cantoni	6,115,486	Sep. 05, 2000

(filed Nov. 04, 1997)

M. G. Albanesi et al. (Albanesi), "Image Compression by the Wavelet Decomposition," Signal Processing, Vol. 3, No. 3, May-June 1992, pages 265-274.

M. N. Chong et al. (Chong), "Concurrent Processing for Picture Archiving and Communication System (PACS), IEEE 1995, pages 468-472.

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The following rejections are on appeal before us:

1. Claims 1-8, 12, 19-24, 38, 45, 49, 50 and 62 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik.

2. Claims 9, 13-18 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Kapcio.

3. Claim 26 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Collins.

4. Claims 10, 11 and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Mason.

5. Claims 28 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Hsieh.

6. Claims 28 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Fang.

7. Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Hsieh and Golin.

8. Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Fang and Golin.

9. Claim 32 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Fang and Novik.

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10. Claims 33-35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Fang and Novik in view of Aravind.

11. Claim 36 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Fang and Novik in view of Aravind and Demos.

12. Claim 37 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Fang and Novik in view of Ghaderi.

13. Claims 38, 44, 47, 48 and 51-53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Aravind.

14. Claim 54 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Aravind and Golin.

15. Claims 46 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Aravind and Yogeshwar.

16. Claims 38-44 and 48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Albanesi.

17. Claims 55 and 56 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Cantoni and Aharoni.

18. Claims 55-59 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Ohhashi and Novik in view of Chong.

19. Claims 60-62 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the disclosure of Novik.

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20. Claims 64-68 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Novik in view of Duso and Resnikoff.

21. Claim 69 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Novik in view of Duso and Resnikoff and further in view of Mason.

22. Claim 70 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Novik in view of Liew.

23. Claims 71-74 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Carnahan in view of Mason and Mack.

24. Claims 74 and 75 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Carnahan in view of Mason and Mack and further in view of Ito.

Rather than repeat the arguments of appellants or the examiner, we make reference to the briefs and the answers for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of anticipation and obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellants' arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answers.

It is our view, after consideration of the record before us, that the evidence relied upon

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does not support any of the examiner's rejections. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189

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USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellants have been considered in this decision. Arguments which appellants could have made but chose not to make in the brief have not been considered and are deemed to be waived [see 37 CFR § 41.37(c)(1)(vii)(2004)].

We consider first the rejection of claims 1-8, 12, 19-24, 38, 45, 49, 50 and 62 based on the combination of Ohhashi and Novik. With respect to independent claims 1, 19 and 23, the examiner essentially finds that Ohhashi teaches the claimed invention except that Ohhashi does not necessarily teach that the reconstructed image is a decompressed image. The examiner notes that decompressing medical images was well known as taught by Novik. The examiner finds that it would have been obvious to the artisan to decompress the medical images of Ohhashi as taught by Novik. The examiner also asserts that the windowing parameters of Ohhashi are combinable with the imaging and viewing parameters of Novik [final rejection, pages 5, 6-7 and 8-9, incorporated into answer at page 5].

Appellants argue that the examiner has failed to establish a prima facie case of obviousness because there is no suggestion, reason, utility or possibility to combine Ohhashi and Novik and still achieve the last claim limitation. Appellants argue that it is not clear how the examiner proposes to combine the teachings of Ohhashi and Novik, but they argue that each possibility fails to result in the claimed invention. Appellants assert that the images of Ohhashi have no decompression associated with them so that there is no basis for applying the

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decompression of Novik to these images. Finally, appellants argue that the proposed combination makes no sense because the references teach away from each other [brief, pages 10-15].

The examiner responds that Ohhashi provides for a dynamic range processed medical image that can be processed with the invention of Novik. The examiner otherwise disagrees with each of appellants' argument in the brief [answer, pages 10-14].

Appellants respond that the final image in Novik is loss-less and does not result from a lossy compression method as claimed. Appellants also respond that Ohhashi does not compress images, but instead, changes the windowing parameters to produce a new image, not a set of compressed data. Thus, appellants assert that the combination makes no sense because Ohhashi does not compress or decompress data whereas Novik does both [reply brief, pages 3-9].

We will not sustain the examiner's rejection of independent claims 1, 19 and 23 based on Ohhashi and Novik for essentially the reasons argued by appellants in the briefs. We primarily agree with appellants' argument that there is no legitimate basis for applying the decompression scheme of Novik to the Ohhashi data. Ohhashi relates to selecting a conversion factor for image data related to the display window. This conversion factor has nothing to do with compression schemes for transmitting image data. Since Ohhashi has nothing to do with compression and decompression schemes for image data transmission, we see no motivation for the artisan to apply a lossy compression method to the data of Ohhashi such that a decompressed image will have substantially a desired image quality. There is no loss of image quality that needs to be

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rectified in Ohhashi. Therefore, not only is the proposed combination of Ohhashi and Novik an apparent attempt to reconstruct the claimed invention in hindsight, but we can see no useful purpose which would be served by combining these teachings.

Since we have found no basis for combining the teachings of Ohhashi and Novik, and since none of the additionally applied references overcome this deficiency, all rejections which rely on this combination of references are also improper. Therefore, we also do not sustain the examiner's rejection of claims 2-11, 12-18, 20-22, 24-30, 38-46, 48, 49, 50, 54-59 and 62.

We now consider the rejection of claim 32 based on Fang and Novik. The examiner essentially finds that Fang teaches the claimed invention except that Fang does not necessarily teach that the reconstructed image is a decompressed image. The examiner notes that decompressing medical images was well known as taught by Novik. The examiner finds that it would have been obvious to the artisan to decompress the medical images of Fang as taught by Novik. The examiner also asserts that the windowing parameters of Fang are combinable with the imaging and viewing parameters of Novik [final rejection, pages 4-5, incorporated into answer at page 5].

Appellants argue that Fang's teachings are essentially the same as the Ohhashi teachings which were argued above. Therefore, appellants argue that claim 32 is improperly rejected for the same reasons discussed above with respect to the rejection based on Ohhashi and Novik [brief, pages 15-16]. The examiner responds that Fang teaches compression [answer, page 15], while appellants contend that Fang does not teach compression and is not related to the claimed

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invention [reply brief, page 10].

We will not sustain the examiner's rejection of independent claim 32. We agree with appellants that the teachings of Fang are essentially the same as the teachings of Ohhashi. Therefore, the proposed combination of Fang and Novik fails for the same reasons discussed above with respect to the rejections based on Ohhashi and Novik.

Since we have found no basis for combining the teachings of Fang and Novik, and since none of the additionally applied references overcome this deficiency, all rejections which rely on this combination of references are also improper. Therefore, we also do not sustain the examiner's rejection of claims 33-37.

We now consider the rejection of claims 60-62 as being anticipated by the disclosure of Novik. 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, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

The examiner has indicated how he reads the claimed invention on the disclosure of Novik [final rejection, pages 2-3, incorporated into answer at page 5]. With respect to independent claim 60, appellants argue that although Novik does calculate a compression ratio from a user provided quality factor Q, such calculating does not constitute an automatic selection

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as claimed. Appellants also argue that the cited portions of Novik fail to disclose automatically determining a desired compression ratio or allowed distortion from a windowing or viewing parameter because the decision making in Novik is made by a human expert. With respect to independent claim 61, appellants argue that Novik fails to disclose providing information related to a desired diagnosis or the automatic selection by a computer of a desired amount of error [brief, pages 31-33].

With respect to claim 60, the examiner responds that compression in Novik takes place at the server, and everything at the server is done automatically. With respect to claim 61, the examiner responds that all the information of Novik is directly related to the medical diagnosis of the image [answer, pages 26-27].

Appellants respond that the examiner has ignored the “selecting” limitation of claim 60 and has failed to respond to appellants’ arguments. With respect to claim 61, appellants respond that setting an error level and setting a compression ratio are not the same thing [reply brief, page 17].

We will not sustain the examiner’s anticipation rejection of independent claims 60 and 61 or of claim 62 which depends from claim 61 for essentially the reasons argued by appellants in the briefs. Although the compression per se in Novik is performed by a computer, the selection of the amount of compression is made by the end user [column 8, lines 3-15]. The end user also does not select a desired compression ratio as claimed, but instead, selects an image quality factor Q which affects the compression factor. The selection made by the user in Novik is also

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not based on a technician supplied windowing parameter. With respect to claim 61, we agree with appellants that there is no information provided in Novik which relates to a desired diagnosis. The image itself does not relate to a desired diagnosis. We also agree with appellants that Novik does not automatically select a desired amount of error responsive to the diagnosis information.

We now consider the rejection of claims 64-68 based on Novik, Duso and Resnikoff. The examiner has indicated how he finds the claimed invention to be obvious over the applied prior art [final rejection, pages 25-27, incorporated into answer at page 6]. With respect to each of these claims, appellants argue that although a user may have control over quality, none of the cited art suggest that a client can select what type of representation to use in response to a desired quality as claimed. Appellants also argue that a faithful representation is not shown by the applied prior art [brief, page 28].

The examiner responds that Novik has direct control over the precision of the representation of the image [answer, page 24]. Appellants respond that the examiner has failed to respond to appellants' argument that control over quality is not the same as or congruent with control over representation type or the faithful representation argument [reply brief, page 15].

We will not sustain the examiner's rejection of claims 64-68 for the reasons argued by appellants in the briefs. We agree with appellants that the examiner has failed to respond to appellants' specific reasonable arguments. Therefore, we are not persuaded by the examiner's findings in support of the rejection. We also do not sustain the examiner's rejection of

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dependent claim 69 which relies on the same arguments just considered.

We now consider the rejection of claim 70 based on Novik and Liew. The examiner has indicated how he finds the claimed invention to be obvious over the applied prior art [final rejection, pages 27-28, incorporated into answer at page 6]. Appellants argue that there is no basis for combining the references because Liew relates to a uniform distortion over the entire image which is undesirable for a medical image. Appellants also argue that the viewing parameter in Novik is received from a user and not stored in an image store as claimed [brief, pages 29-30].

The examiner responds that there is no reason why Liew could not be used for medical images. The examiner also responds that the viewing parameters in Novik are inherently stored [answer, pages 24-25]. Appellants respond that they provided a reason why Liew cannot be used with medical images. Appellants also respond that the examiner did not show that it was inherent to store the viewing parameters in an image store and in association with an image [reply brief, page 16].

We will not sustain the examiner's rejection of claim 70 because we agree with appellants that the examiner has failed to properly address appellants' arguments with respect to claim 70.

We now consider the rejection of claims 71-74 based on Carnahan, Mason and Mack. The examiner has indicated how he finds the claimed invention to be obvious over the applied prior art [final rejection, pages 28-29, incorporated into answer at page 6]. Appellants argue that

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it is not clear how to combine the DCT art of Mason and Mack with the wavelet art of Carnahan. Appellants argue that interleaving of wavelet data is not the same as interleaving of DCT coefficients. Appellants also argue that the segmentation of Carnahan is not the same as the claimed segmentation [brief, page 30].

The examiner responds that wavelet coefficients are not claimed. The examiner reiterates that the applied prior art teaches the claimed invention [answer, page 25]. Appellants respond that the examiner ignored their argument that the combination of art is improper and their argument related to progressive reconstruction [reply brief, page 16].

We will not sustain the examiner's rejection of claims 71-74 because we agree with appellants that the examiner has failed to properly address appellants' arguments with respect to these claims. We also do not sustain the examiner's rejection of dependent claim 75 for the same reasons.

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In summary, we have not sustained any of the examiner's rejections of the claims on appeal. Therefore, the decision of the examiner rejecting claims 1-30, 32-62 and 64-75 is reversed.

REVERSED

JERRY SMITH)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH F. RUGGIERO)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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