

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 5,477,305

Page 1 of 6

DATED : December 19, 1995

INVENTOR(S) : Parker et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On title page, item [56]

IN THE OTHER PUBLICATIONS:

Cover page, col. 2, lines 3-4, change "IFEE" to --IEEE-- and change "Transaction" to --Transactions--.

Page 2, col. 1, line 15, change "4,888,576" to --4,885,576-- and change "Pennabaker" to --Pennebaker--.

Page 2, col. 1, line 24, change "457" to --456--.

Page 3, col. 1, line 11, change "Mesereau" to --Mersereau--.

Please add the following references acknowledged by the Examiner but not appearing in the **References Cited**.

--5,111,310	5/1992	Parker et al.	358	456
5,341,228	8/1994	Parker et al.	358	456

Sonnenberg, H. (1983) "Designing Scanners for Laser Printers", *Lasers & Applications*, April, pp. 67-70

Stevenson, R.L. and G.R. Arce (1985) "Binary display of hexagonally sampled continuous-tone images", *J. Opt. Soc. Am. A*, vol. 2, no. 7, pp. 1009-1013

Stoffel, J.C. and J.F. Moreland (1981) "A survey of electronic techniques for pictorial reproduction", *IEEE Tran. Commun.*, vol. 29, 1898-1925

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IN THE OTHER PUBLICATIONS: (CONTINUED)

Stucki, P. (1979) "Image processing for document reproduction", in *Advances in Digital Image Processing*. New York: Plenum Press, pp. 177-218

Stucki, P. (1981) "MECCA-a multiple-error correcting computation algorithm for bilevel image hardcopy reproduction", Research Report RZ1060, IBM Research Laboratory, Zurich, Switzerland

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Ulichney, R.A. and D. Troxel (1982) "Scaling Binary Images with the Telescoping Template", *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. PAMI-4, pp. 331-335

Ulichney, R.A. (1985) "Generalized ordered dither", M.I.T., ATRP-T-51. also Digital Equipment Corporation, DEC-TR-412

Ulichney, R. A. (1987) *Digital Halftoning*, Cambridge, MA: M.I.T. Press

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Voss, R.F. and J. Clarke (1978) "'1/f noise' in music: music from 1/f noise", *J. Acoustic Soc. Am.*, vol. 63, no. 1, pp. 258-263

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Witten, I.H. and M. Neal (1982) "Using peano curves for bilevel display of continuous-tone images", *IEEE CG&A*, May, pp. 47-52

Woo, B. (1984) "A survey of halftoning algorithms and investigation of the error diffusion technique", M.I.T. S.B. Thesis

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IN THE OTHER PUBLICATIONS (CONTINUED):

Yule, J.A.C. (1967) *Principles of Color Reproduction*, New York: John Wiley & Sons

J.P. Allebach. "Aliasing and Quantization in the Efficient Display of Continuous Tone Imagery". *Journal of the Optical Society of America*, 69(6):869-877, June, 1979

J.P. Allebach and R.N. Stradling. "Computer-aided Design of Dither Signals for Binary Display of Images". *Applied Optics*, 18(15):2708-2713, August 1979

C. Allen and R.A. Schindler. "Determining Image Quality from Electronic or Digital Signal Characteristics". In *SPIE Advances in Image Transmission*, volume 249, pages 179-184, 1980

D. Anastassiou and S. Kollias. "Digital Halftoning Using Neural Networks". In *SPIE Visual Communications and Image Processing*, volume 1001, pages 1062-1069, 1988

M. Broja, F. Wyrowski, and O. Bryngdahl. "Digital Halftoning by Iterative Procedure". *Optics Communications*, 69(3,4):205-210, January, 1989

O. Bryngdahl. "Halftone Images: Spatial Resolution and Tone Reproduction". *Journal of the Optical Society of America*, 68(3):416-422, March 1978

F.W. Campbell and D.G. Green. "Optical and Retinal Factors Affecting Visual Resolution". *Journal of Physics*, 181:576-593, 1965

P. Carnevali, L. Coletti, and S. Patarnello. "Image Processing by Simulated Annealing". *IBM Journal of Research and Development*, 29:569-579, November, 1985

R. Eschbach and R. Hauck. "A 2-D Pulse Density Modulation by Iteration for Halftoning". *Optics Communications*, 62(5):300-304, June 1987

G.S. Fawcett and G.F. Schrack. "Halftoning Techniques Using Error Diffusion". In *Proceedings of the SID*, volume 27(4), pages 305-308, 1986

J.P. Guilford. *Psychometric Methods*. McGraw-Hill, 1954

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IN THE OTHER PUBLICATIONS (CONTINUED):

T.A. Hentea and V.R. Algazi. "Perceptual Models and the Filtering of High Contrast Achromatic Images". *IEEE Transactions on Systems, Man, and Cybernetics*, SMC-14(2):230-246, April, 1984

J.O. Limb. "Distortion Criteria of the Human Viewer". *IEEE Transactions on Systems, Man, and Cybernetics*, SMC-9(12):778-793, December, 1979

J. L. Mannos and D.J. Sacrison. "The Effects of a Visual Fidelity Criterion on the Encoding of Images". *IEEE Transactions on Information Theory*, IT-20(4):525-535, July, 1974

S. Matsumoto and B. Liu. "Analytical Fidelity Measures in the Characterization of Halftone Processes". *Journal of the Optical Society of America*, 70(10):1248-1254, 1980

P.W. Melnychuck and R. Shaw. "Fourier Spectra of Digital Halftone Images containing Dot-position Errors". *Journal of the Optical Society of America*, 5(8): 1328-1338, August, 1988

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W. Naing, Y. Miyake, N. Abe, and S. Kubo. "Analysis of Tone Reproduction Characteristics for Inkjet Images by a Modified Yule-Nielsen Equation". *Journal of Imaging Technology*, 14(1):6-11, February, 1988

P.G. Roetling. "Visual Performance and Image Coding". In *SPIE/OSA Image Processing*, volume 74, pages 195-199, 1976

R.A. Schindler. "Physical Measures of Image Quality and their Relationship to Performance". In *SPIE Advances in Display Technology*, volume 199, pages 117-125, 1979

J. Sullivan, R. Miller, and G. Pios. "Image Halftoning Using Visual Error Diffusion". *Journal of the Optical Society of America*, 1990 in Press; [ Published: 10 (8): 1714-1724, 1993]

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IN THE PUBLICATIONS (CONTINUED):

J. Sullivan, L. Ray, and R. Miller. "Design of Minimum Visual Modulation Halftone Patterns". *IEEE Transactions on Systems, Man, and Cybernetics*, 21(1):33-38, January-February, 1991

J.W. Wesner. "Screen Patterns Used in Reproduction of Continuous-tone Graphics". *Applied Optics*, 13(7):1703-1710, July, 1974--

Col. 1, line 9, change "622,656" to --622,056--;  
line 56, delete "-".

Col. 2, line 66, change "profile" to --profiles--.

Col. 3, line 42, change "Baker" to --Bayer--.

Col. 7, line 67, change "Periodicities" to --periodicites--.

Col. 9, line 30, change "end" to --and--;  
line 60, change "]p'" to --]=p'--.

Col. 12, line 53, change " $2^{K-1}$ " to -- $2^K-1$ --.

Col. 14, line 38, change "rain" to --min--.

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IN THE CLAIMS:

Col. 18, claim 20, line 5, after "film" insert --,--;  
change "provided" to --produced--.

Col. 20, claim 32, line 15, change "convening" to --converting--;  
claim 33, line 1, change "shilling" to --shifting--; and  
claim 37, line 3, after "a)" insert --a--.

Col. 21, claim 37, line 11, change "convening" to --converting--;  
claim 39, line 24, change "convening" to --converting--.

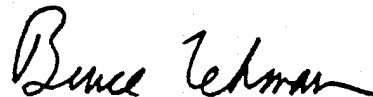
Col. 22, claim 46, line 4, change "a periodic" to --aperiodic--.

Col. 23, claim 61, line 2, after "comparator" insert --for comparing--;  
claim 64, line 2, after "multibit" insert --threshold--.

Signed and Sealed this

Seventeenth Day of June, 1997

Attest:



BRUCE LEHMAN

Attesting Officer

Commissioner of Patents and Trademarks