

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte SHEN-GE WANG

Appeal No. 2003-1816
Application No. 09/195,593

ON BRIEF

Before RUGGIERO, BARRY, and BLANKENSHIP, *Administrative Patent Judges*.
BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

A patent examiner rejected claims 1-7. The appellant appeals therefrom under 35 U.S.C. § 134(a). We reverse.

BACKGROUND

The invention at issue on appeal is a digitized rendering system that may be used in electrophotographic, color copiers. (Spec. at 1.) More specifically, the system is aimed at reducing the memory needed to store stochastic-cluster or stochastic-line screens. Consider a stochastic-cluster or a stochastic-line screen composed of M×N of cells, which are identical in shape to a base halftone cell comprising H×K pixels.

Instead of storing $(M \times N) \times (H \times K)$ threshold values for the screen, the appellant stores three sets of data. The first set of data, $T(I_p, J_p)$, represents $H \times K$ thresholds of the base halftone cell where (I_p, J_p) are the coordinates of each pixel of the base cell. The second set of data, $C(I_p, J_p)$, represents $H \times K$ increments of thresholds corresponding to the first set of data. For example, if a threshold value in the first set represents the level corresponding to k -pixel pattern, T_k , the increment in the second set is $C_k = T_k - T_{k-1}$. The third set of data, $F(I_c, J_c)$, represents $M \times N$ fill-in indices, which address the cells, where (I_c, J_c) are the coordinates of "referring" pixel of the specific cell in the composite screen. (*Id.* at 33-34.)

The thresholds of the first set and the increments of the second set are represented in an eight-bit format. The indices of the third set are represented in a format of no more than eight bits. Accordingly, no more than $2 \times (H \times K) + (M \times N)$ bytes of memory are needed to store the screen. To store a 192×192 stochastic-cluster screen, for example, the appellant explains that "four bits can be enough to specify the fill-in order. . . ." (*Id.* at 34.) They assert that storing the screen in a conventional halftone format would require 36,864 bytes of memory. In contrast, storing the screen in the appellant's format would require only $2 \times 18 + 1024 = 1060$ bytes of memory. (*Id.*)

A further understanding of the invention can be achieved by reading the following claim.

1. A method for storing a stoclustic¹ or stochastic halftone screen having (M*N) cells and (H*K) elements in a memory device, comprising the steps of:

- (a) storing (H*K) threshold values;
- (b) storing (H*K) incremental threshold values; and
- (c) storing (M*N) fill-in indices for addressing the (M*N) cells.

Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,267,054 ("Chang").

OPINION

Rather than reiterate the positions of the examiner or the appellant *in toto*, we focus on a point of contention therebetween. The examiner asserts, "Chang et al. discloses (Figure 6b) . . . an array of indices (dx', dy') for indexing the cells of a threshold array." (Final Rejection at 2.)² The appellant argues, "[t]he Examiner has erroneously asserted that the disclosure of values for the distances of x and y from the

¹The specification omits a definition of the term "stoclustic."

²"We advise the examiner to copy his rejections into his examiner's answers. . . ." *Ex parte Metcalf*, 67 USPQ2d 1633, 1635 n.1 (Bd.Pat.App.& Int. 2003).

origin (dx', dy') is equivalent to the claimed (M*N) fill-in indices for addressing the claimed (M*N) cells." (Appeal Br. at 9.)

In addressing the point of contention, the Board conducts a two-step analysis. First, we construe the independent claim at issue to determine its scope. Second, we determine whether the construed claim would have been obvious.

1. CLAIM CONSTRUCTION

"Analysis begins with a key legal question — *what is the invention claimed?*" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). "[T]he main purpose of the examination, to which every application is subjected, is to try to make sure that what each claim defines is patentable. *[T]he name of the game is the claim. . . .*" *In re Hiniker Co.*, 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998) (quoting Giles S. Rich, *The Extent of the Protection and Interpretation of Claims --American Perspectives*, 21 Int'l Rev. Indus. Prop. & Copyright L. 497, 499, 501 (1990))

Here, claim 1 recites in pertinent part the following limitations: "[a] method for storing a stoclustic or stochastic halftone screen having (M*N) cells and (H*K) elements in a memory device, comprising . . . storing (M*N) fill-in indices for addressing the (M*N)

cells." Accordingly, the independent claim requires storing fill-in indices for addressing the cells of a stoclustic or stochastic halftone screen.

2. OBVIOUSNESS DETERMINATION

Having determined what subject matter is being claimed, the next inquiry is whether the subject matter would have been obvious. "In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness." *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993) (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)). "A *prima facie* case of obviousness is established when the teachings from the prior art itself would . . . have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)).

Here, Chang's "invention . . . provide[s] a method and apparatus for storing halftone cells in the minimum amount of memory space." Col. 4, ll. 14-15. "To minimize the amount of memory needed to store a half-tone cell and still provide a quick and simple method to access the threshold values during the rendering process, the tiles are

unwrapped and organized in an array referred to as a threshold array, which provides a more simple mapping to the display space." Col. 9, ll. 25-31.

"As illustrated by the flow chart of FIG. 6b, the threshold array stored in memory may . . . be easily accessed to render a digital halftone image." Col. 11, ll. 29-31. More specifically, "dy and dx coordinates for a particular pixel are mapped to the threshold array memory coordinate by a translation, whereby dx', the x distance from the origin of the threshold array, is equal to: $(dx-n*\text{offset}) \bmod (\text{threshold width})$ where mod represents a modular function." Col. 12, ll. 3-8. "Similarly dy', the y distance from the origin, is equal to: $dy-n*h$." *Id.* at ll. 11-12.

Although we agree with the examiner that dx' and dy' are used as indices, we are unpersuaded that the indices are used to address the cells of a stoclustic or stochastic halftone screen. To the contrary, block 260 of Figure 6b discloses that dx' and dy' are used to index the reference's threshold array. Furthermore, the examiner recognizes that dx' and dy' are used "for indexing the cells of a threshold array." (Final Rejection at 2.) Absent a teaching or suggestion of storing fill-in indices for addressing the cells of a stoclustic or stochastic halftone screen, we are unpersuaded of a *prima facie* case of obviousness. Therefore, we reverse the obviousness rejection of claim 1 and of claims 2-7, which depend therefrom.

CONCLUSION

In summary, the rejection of claims 1-7 under § 103(a) is reversed.

REVERSED

JOSEPH F. RUGGIERO
Administrative Patent Judge

LANCE LEONARD BARRY
Administrative Patent Judge

HOWARD B. BLANKENSHIP
Administrative Patent Judge

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