

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 10

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte AKIRA ISHII

Appeal No. 1998-0883
Application 08/498,570¹

ON BRIEF

Before KRASS, BARRETT, and LALL, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

¹ Application for patent filed July 6, 1995, entitled "Multi-Color Image Forming Method And Apparatus."

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This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1, 3, 5, and 7. Claim 2 stands objected to as depending from a rejected base claim. Claims 4 and 6 have been canceled.

We reverse.

BACKGROUND

The disclosed invention is directed to a color image forming apparatus and method that avoids direct superimposition of the dots that make up the color images. The centers of the dots are shifted slightly from each other so they are not directly superimposed, which tends to reduce undesirable moiré pattern effects.

Claim 1 is reproduced below.

1. A multi-color image forming apparatus comprising:

means for receiving color image signals that are separated by color;

means for assigning screen angles to the respective color image signals;

means for generating clock signals having phases that deviate from one another sequentially by 1/8 of a period of a dot reference clock signal; and

means for selecting one of the generated clock signals for each color on a scanning line basis so as to produce the respective assigned screen angles and to

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cause differences among initial phases for the
respective colors.

The Examiner relies on the following prior art:

Usami et al. (Usami)	5,469,266	November 21,
1995		(filed June 13, 1994)

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Claims 1, 3, 5, and 7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Usami.²

We refer to the Final Rejection (Paper No. 6) (pages referred to as "FR__") and the Examiner's Answer (Paper No. 9) (pages referred to as "EA__") for a statement of the Examiner's position and to the Appeal Brief (Paper No. 8) (pages referred to as "Br__") for a statement of Appellant's arguments thereagainst.

OPINION

The two issues are whether Usami teaches or suggests: (1) "means for generating clock signals having phases that deviate from one another sequentially by 1/8 of a period of a dot reference clock signal"; and (2) "means for selecting one of the generated clock signals for each color on a scanning line basis so as to produce the respective assigned screen angles and to cause differences among initial phases for the respective colors" (emphasis added). Claim 7 is similar to claim 1 except that it is a method claim and is

² The statement of the claims on appeal and the rejection lists claims 1, 3-5, and 7 (Examiner's Answer, pages 2 and 5). However, since claim 4 has been canceled, the Examiner apparently meant to refer to claims 1, 3, 5, and 7.

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not written in means-plus-function format under 35 U.S.C. § 112, sixth paragraph. However, it contains similar language to claim 1 and the issues are the same. The claims will stand or fall together with representative claim 1.

Clock signals

The limitation of "means for generating clock signals having phases that deviate from one another sequentially by 1/8 of a period of a dot reference clock signal" would not be an issue except for the Examiner's statement of the rejection.

Usami discloses that the delay line 206 in Figure 15 provides eight types of delay patterns, which are 1/8 of the reference unit of the pulse width modulation (or 1/4 pixel since a reference unit is two pixels) (col. 14, lines 60). That is, the patterns have delays of 0/4 to 7/4 pixel (col. 14, lines 60-63). Appellant admits that Usami discloses generating eight types of delay patterns and selecting any one of the eight delay patterns for Y, M, C, and Bk color signals (Br5).

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The problem is that the Examiner finds that Usami does not specifically state that signals are separated by 1/8 period and states (FR4; EA7):

It would have been obvious to one of ordinary skill in the art to separate signals by 1/8th phase simple [sic] as a matter of design choice. Furthermore, one of skill in the art would have known to reprogram the delay pattern in the phase change quantity pattern generator 204 in order to get the 1/8 phase delay as desired.

Although Appellant admits that Usami discloses the 1/8 period phases, Appellant submits that the Examiner's reasoning is conclusory and improper (Br5-6).

Since we find the 1/8 period phase limitation taught by Usami, it is unnecessary to address the Examiner's reasoning.

Differences among initial phases

The real issue is whether Usami discloses "means for selecting one of the generated clock signals for each color on a scanning line basis so as to produce the respective assigned screen angles and to cause differences among initial phases for the respective colors" (emphasis added). The underlined language refers to the fact that the eight phase signals T0-T7 in Appellant's Figure 2 are selected so

that the initial position of the dots of the respective colors are shifted from one another so that dots are not physically superimposed one exactly on another (although there may be a slight overlap) and the strong-contrast moiré pattern is reduced (specification, page 8, lines 1-8, 24-26; page 9, lines 20-26). Figure 3 shows selection of the phase signals for 90E-, 63.5E-, -63.5E-, and ±45E-screen dots and Figures 4-6 show the offsets in the initial phases for the different screen angles. Note, for example, that phase signals T0, T6, T4, and T1 could have been chosen for the 63.5E-screen angle in Figure 3(b) instead of signals T1, T7, T5, and T3; however, this would have resulted in the dots for the 90E-screen angle and the 63.5E-screen angle having the same initial phase and being on top of one another.

We find that Usami does not teach or suggest different initial phases for the respective colors. Usami discloses different delays between the lines for the various colors (4/4 pixel or 4/8 dot for the first color; no delay for the second and third colors; and 2/4 pixel or 2/8 dot for four successive lines of the fourth color) (col. 12, lines 21-34), but does not disclose a difference in the

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initial phases among the colors. Referring to Figures 14A-14D, the first line is at the same position for all four colors; thus, the initial phase is the same for all colors. The same relationship is shown in Figures 31A-31D and 33A-33D.

The Examiner has not shown that Usami has different initial phases for the respective colors. The Final Rejection and the statement of the rejection in the Examiner's Answer do not address the limitation. In the response to the arguments, the Examiner states that Figure 8A shows that Usami recognized the problem of unacceptable overlap of pixels which causes interference patterns (EA11). Actually, the overlap in Figure 8A is intentional; it is the deviation that causes undesirable irregular interference between dots as shown in Figure 12 (col. 5, lines 24-33).

The Examiner points to Figures 24A and 24B for colors that are non-overlapping (EA11). These figures show the configurations for the individual colors. When the colors are printed, the first row of pixels will overlap because the rows start at the same initial position.

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The Examiner states that the initial phases are not identical as shown in Figures 25A and 25B (EA12). However, the first lines in Figures 25A and 25B have the same initial phase. It appears that the Examiner is looking at the displacement in phases among the second, third, and fourth line with respect to the first line rather than looking at the initial phases, as called for by claim 1.

The Examiner attacks Appellant's statement that "Usami appears to teach away from the present invention, because as shown in the figures of Usami, the initial phases of the different colors appear to all be identical" (Br5) as being "weak and tenuous" (EA12) because of the word "appears." The Examiner states that Appellant does not point to any section of Usami or any particular one of the approximately 100 figures and, therefore, "Applicant's contention is nothing but an unfounded allegation" (EA12).

It is the Examiner's responsibility to point out the parts of Usami that are relied on and this was not done in the Final Rejection. Therefore, the Examiner is not in a good position to state that Appellant has not argued persuasively. Moreover, in the same paragraph as the

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sentence quoted, Appellant points to Figures 14A-14D and we agree that these figures do not show a difference among the initial phases for the colors. The Examiner's reasoning in the Examiner's Answer is not persuasive. What the Examiner needs to show is an offset among initial phases, such as shown in Appellant's Figure 4.

For the reasons discussed above, we conclude that the Examiner has failed to establish a prima facie case of obviousness. The rejection of claims 1, 3, 5, and 7 is reversed.

REVERSED

	ERROL A. KRASS)	
	Administrative	Patent Judge)
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)	BOARD OF
PATENT)	
	LEE E. BARRETT)	APPEALS
	Administrative Patent Judge)	AND
)	INTERFERENCES
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PARSHOTAM S. LALL)
Administrative Patent Judge)

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