

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 26

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte TSUYOSHI KITAHARA,  
MINORU USUI, TAKAHIKO NAKA,  
OSAMU NAKAMURA, AND TATSUYA SESHIMO

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Appeal No. 96-2881  
Application 08/013,646<sup>1</sup>

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ON BRIEF

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Before THOMAS, BARRETT, and HECKER, Administrative Patent Judges.

HECKER, Administrative Patent Judge.

DECISION ON APPEAL

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<sup>1</sup> Application for patent filed February 04, 1993.

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Application No. 08/013,646

This is a decision on appeal from the final rejection of claims 1 and 2, which are all of the claims pending in the application.

The invention is directed to an ink jet recording head having at least four rows of nozzle openings. In particular, the rows are paired so that the interval between rows within the same pair is smaller than the interval between rows belonging to different pairs. As illustrated in Figure 1, intervals L1 and L2 are smaller than interval L3. The nozzle openings of adjacent rows are not in line vertically in the nozzle plate, but rather are staggered with respect to one another. Dots are printed via the nozzle openings in a row sequence of B, D, C, A and B.

Independent claim 1, is reproduced as follows:

1. An ink jet recording head, comprising:

a nozzle plate into which a plurality of nozzle openings are formed;

means for supplying an ink;

a plurality of pressure producing chambers each communicating with said plurality of nozzle openings correspondingly for supplying a pressure to said ink supplied from said ink supply means to jet said ink from said nozzle openings;

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pressure producing chamber forming members, contacting said nozzle plate and disposed between said pressure producing chambers, for defining said pressure producing chambers;

a vibrating plate, contacting said pressure producing chamber forming members and disposed a predetermined distance from said nozzle plate, an upper surface of said vibrating plate defining bottoms of said pressure producing chambers; and

reinforcing members, disposed on a lower surface of said vibrating plate, for reinforcing said vibrating plate, at least one of said reinforcing members corresponding to said pressure producing chamber forming members,

wherein said plurality of nozzle openings comprise at least four rows of nozzle openings arranged in a main scanning direction, said rows being arranged in groups, each group comprising a pair of adjacent rows, a first space between adjacent rows of the same pair being smaller than a second space between adjacent rows of different pairs, each row having a plurality of nozzle openings so as to extend straightly in a sheet forward direction at a pitch corresponding to the number of nozzle opening rows, and the rows of nozzle openings in an auxiliary scanning direction are staggered at a certain pitch so that an order of arrangement of the rows of nozzle openings is different from the physically arranged order,

and wherein said pressure producing chamber forming members are disposed beneath said nozzle plate between adjacent rows of the same pair.

The references relied on by the Examiner are as follows:

Usui et al. (Usui)

EP 0 443 628 A2

Aug. 28, 1991

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Mineta et al. (Mineta) JP 59-209882<sup>2</sup> Nov. 28,  
1984

Claims 1 and 2 stand rejected under 35 U.S.C. § 103 as being unpatentable over Usui in view of Mineta.

Rather than repeat the arguments of Appellants or the Examiner, we make reference to the brief, reply brief, supplemental reply brief, answer and supplemental answer for the details.

#### OPINION

After a careful review of the evidence before us, we will sustain the Examiner's rejection of claims 1 and 2 under 35 U.S.C. § 103.

With regard to the rejection of claim 1 under 35 U.S.C. § 103 as being unpatentable over Usui in view of Mineta, Appellants do not dispute that the combination meets all but the last two paragraphs of the claim; i.e., there is no dispute regarding the nozzle plate, ink supply, pressure chambers, chamber forming members, vibrating plate and

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<sup>2</sup> We will use a PTO supplied translation in the application file dated September 1995.

reinforcing members. Appellants have repeatedly argued and focused on the language of the next to last paragraph of claim 1, starting with "wherein" through "physically arranged order,".

Appellants argue:

Moreover, Usui et al. fails to teach or suggest a recording head including a nozzle plate having at least four rows arranged as noted above, such that the rows of nozzle openings in an auxiliary scanning direction are staggered at a predetermined pitch so that an order of arrangement of the rows (e.g., B, D, C, A, B, ...) during printing is different from the physically arranged order (e.g. A, B, C, D), as recited in claim 1. (Emphasis added.) (Brief at page 7.)

Moreover, while the rows of nozzle openings illustrated in Figure 7 or Mineta are staggered in the auxiliary scanning direction, they are not staggered in such a manner that the order of arrangement upon printing is different from the physical order of arrangement, as recited in claim 1 of the present application. (Emphasis added.) (Brief at page 8.)

In particular, one skilled in the art, reading claim 1 in view of the specification, would clearly understand that the staggered arrangement of rows of nozzle openings in an auxiliary scanning direction where "an order of arrangement of rows of the nozzle openings is different from the physically arranged order," means that the arrangement of rows of nozzle openings during printing is different from the physically arranged order of rows of nozzle openings. When claim 1 is read in light of the

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specification, the claim can have only the meaning noted above, as no other interpretation makes sense. (Emphasis added.) (Reply brief at pages 2 and 3.)

The Examiner responds:

This argument is not persuasive because it is unsupported by claim language. The claim language does not contain the limitation during printing. (Answer at page 4.)

Appellants take issue with the Examiner's statement that an argued limitation, i.e. during printing, was not persuasive because this limitation is not part of the claim language. Appellants state the claims are clear and definite in defining that which they regard as their invention. Appellants are correct in stating there is no 35 U.S.C. § 112, second paragraph, rejection. The noted examiners statement merely refers to the fact that Appellants arguments are not of the same scope as their claim language. (Emphasis added.) (Supplemental answer at page 1.)

"[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).

"Analysis begins with a key legal question--what is the invention claimed? . . . Claim interpretation . . . will normally control the remainder of the decisional process."

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Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1567-68, 1  
USPQ2d 1593, 1597 (Fed. Cir.), cert. denied, 481 U.S. 1052  
(1987). We agree with the Examiner. The argued language of  
claim 1,

...and the rows of nozzle openings in an auxiliary  
scanning direction are staggered at a certain pitch  
so that an order of arrangement of the rows of  
nozzle openings is different from the physically  
arranged order,...(Emphasis added.)

provides no structural distinction over the applied art, but  
goes to the functionality of the invention. Appellants  
support this interpretation as noted supra, wherein each  
argument we have cited, stresses this "function", i.e. during  
printing.

Appellants further argue lack of motivation in  
combining references. Starting at page 4 of the reply brief,  
Appellants state:

In order to arrive at some form of the  
Appellants' claimed invention, one skilled in the  
art would have to modify the device taught by Usui  
et al. to include at least four rows of nozzle  
openings as taught by Mineta, and further modify the  
four rows of nozzle openings to be arranged into  
pairs such that the space between each pair is  
greater than the space between each row in each  
pair. Finally, the device resulting from the  
combined teachings of Usui et al. and Mineta would  
have to be further modified by modifying the

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staggered arrangement of nozzle openings taught by Mineta to include a staggered arrangement of the rows of nozzle openings in the auxiliary scanning direction such that the order of rows of nozzle openings during printing is different from the physically arranged order, as suggested by Lee et al.<sup>3</sup>

We cite this statement to show that Appellants understand the claimed elements are taught, but in different references. The Examiner's rejection combines Mineta with Usui "for the purpose of higher accuracy in printing." "It should be too well settled now to require citation or discussion that the test for combining references is not what the individual references themselves suggest but rather what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art." In re McLaughlin, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). We agree with the Examiner as to the obviousness of combining Usui and Mineta for higher accuracy in printing.

Although both the Appellants and the Examiner mention the Lee et al. reference, both agree that Lee et al. is not part of the rejection. Furthermore, our reviewing court has stated that where a reference is relied on to

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<sup>3</sup> Lee et al., 4,475,113, Oct. 2, 1984.

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support a rejection, whether or not in a minor capacity, there would appear to be no excuse for not positively including the reference in the statement of the rejection. In re Hoch, 428 F.2d 1341, 1342, 166 USPQ 406, 407 (CCPA 1970).

Although Lee et al. was mentioned as teaching the claim language,

...and the rows of nozzle openings in an auxiliary scanning direction are staggered at a certain pitch so that an order of arrangement of the rows of nozzle openings is different from the physically arranged order,...(Emphasis added.)

as discussed supra, this language recites no structural difference over the cited art (Usui and Mineta), but goes to the functionality of the invention. Therefore Lee et al. is not needed for us to sustain the rejection of claim 1. For this reason and those discussed supra, we will sustain the 35 U.S.C.

§ 103 rejection of claim 1.

With regard to claim 2, Appellants argue that "neither Usui et al. nor Mineta teaches or suggests a recording head which includes a common reserve tank which is common to two adjacent rows of nozzle openings." (Brief at

page 9.)

The Examiner responds "Usui discloses (Figure 23a) such a common reservoir tank 186. Mineta also discloses (Figures 1A, 1B) such a common reservoir tank 8." (Answer at page 6.) Further, the Examiner states, "Since Figure 23a [of Usui] is a sectional view, the rows are not illustrated. For a showing of adjacent rows of nozzle openings, a perspective view is needed. Perspective Figures 1 (10',10) and 28 (262,264) show adjacent rows of nozzle openings. Mineta discloses (Figure 1) a common reserve tank 8 for nozzle openings 4. For the showing of adjacent rows, note Figure 2A (14A,14B)." (Supplemental answer at page 2.)

Appellants further respond "The Examiner's assertion is incorrect. Figures 1 and 28 illustrate different embodiments of the invention from that illustrated in Figure 23a of Usui. In fact, the embodiment illustrated in Figure 23a does not include rows of nozzle openings, as suggested by the Examiner." (Supplemental reply brief at page 2.)

Reviewing Usui, we fail to see how Appellants have determined that Figure 23a does not include rows of nozzle openings. We also fail to see a positive indication that

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Figure 23a does include rows of nozzle openings. We do see that Figure 28 of Usui (discussed by the Examiner and Appellants) does include rows of nozzle openings, and that Figure 29 (depicting a cross section of Figure 28) shows a common ink tank for nozzles (262,264) in adjacent rows. Note also page 9 of Usui, left column, lines 28-36. In addition, Appellants have not disputed that Mineta teaches the common ink tank as asserted by the Examiner in Figure 2A. Mineta recites on translation page 7, "In the ink jet recording head shown in Figure 2, the common ink chambers installed to the aligned nozzles (14A and 14B) enables a head to print color ink for each line of nozzles."

Therefore, it is clear to us that both Usui and Mineta teach Appellants' claim 2 limitation of a common ink tank. Thus, we will sustain the 35 U.S.C. § 103 rejection of claim 2.

In view of the foregoing, the decision of the Examiner rejecting claims 1 and 2 under 35 U.S.C. § 103 is affirmed.

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No period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

	)	
JAMES D. THOMAS	)	
Administrative Patent Judge	)	
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	)	
	)	BOARD OF PATENT
LEE E. BARRETT	)	)
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
STUART N. HECKER	)	
Administrative Patent Judge	)	

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Sughrue, Mion, Zinn, Macpeak & Seas  
2100 Pennsylvania Ave., N.W.  
Washington, DC 20037