

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte YOSHIHIRO HAGIWARA, RYOSUKE UEMATSU, JUNICHI SUETSUGU,  
HITOSHI MINEMOTO, and KAZUO SHIMA

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Appeal No. 1999-1652  
Application No. 08/758,369

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HEARD: August 16, 2001

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Before JERRY SMITH, DIXON, and BARRY, Administrative Patent Judges.

BARRY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the rejection of claims 1-4. We reverse.

BACKGROUND

The invention at issue in this appeal is an ink jet recording head for ejecting liquid ink having charged toner particles therein. As shown in Figure 1 of the appellants' specification, the recording head includes an ink reservoir 3

disposed above a head body 1. An ink inlet tube 8 and an ink outlet tube 9 connect the reservoir and head body. The reservoir uses gravity to feed liquid ink 13 into the ink inlet tube. As shown in Figure 3 of the specification, the gravity-fed ink flows through the ink inlet tube into an ink chamber 2 of the head body via an ink inlet port 10A.

An electrophoretic electrode 6 is disposed at the rear of the ink chamber. When a voltage having the same polarity as the charged toner particles is applied to the electrophoretic electrode, the charged toner particles migrate toward the front of the ink chamber, which causes the liquid ink to flow in the direction of arrow 14. The liquid ink flowing within the ink chamber is either ejected through an ejection slit provided at the front end of the ink chamber based on the action of ejection electrodes 5 or returned to the reservoir via an ink outlet port 11A. Accordingly, the appellants' recording head provides an ink circulating feature without the conventional need for an ink circulating pump. Furthermore, the ink circulating feature provides a constant supply of charged toner particles toward the ejection slit.

Claim 1, which is representative for our purposes,  
follows:

1. An ink jet recording head for ejecting liquid ink having charged toner particles comprising:

a head body;

an ink chamber in said head body for receiving a liquid ink containing a plurality of charged toner particles, said ink chamber having a front end, a rear end, an ink inlet port disposed adjacent said rear end, an ink outlet port disposed adjacent said front end, and an ink ejecting slit extending along the front end of said ink chamber;

a set of electrodes including (1) a plurality of ejection electrodes arranged within said ink chamber, said plurality of ejection electrodes having a plurality of tips along said ink ejecting slit for ejecting the plurality of charged toner particles from said ink chamber, (2) an electrophoretic electrode disposed within said ink chamber and (3) an opposing electrode disposed outside said ink chamber and opposed to said plurality of tips of said plurality of ejection electrodes, said ink inlet port disposed between said electrophoretic electrode and said plurality of tips of said plurality of ejection electrodes; and

an ink reservoir, disposed above said ink chamber and connected to said ink inlet port and said ink outlet port, for providing the liquid ink by gravity to said ink chamber through said ink inlet port and for receiving the liquid ink from said ink chamber through said ink outlet port.

The prior art applied in rejecting the claims follows:

Tamura Japanese Patent Disclosure 60-250962 Dec. 11,  
1985<sup>1</sup>

Barbero et al. (Barbero) 4,432,003  
Feb. 14, 1984.

Claims 1-4 stand rejected under 35 U.S.C. § 103(a) as being obvious over Tamura in view of Barbero. Rather than reiterate the arguments of the appellants or examiner in toto, we refer the reader to the briefs and answer for the respective details thereof.

#### OPINION

After considering the record, we are persuaded that the examiner erred in rejecting claims 1-4. Accordingly, we reverse. We begin by noting the following principles from In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993).

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. 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

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<sup>1</sup>A copy of the translation prepared by FLS, Inc. (April 1998) for the U.S. Patent and Trademark Office is attached. We will refer to the translation by its page numbers.

itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." In re Bell, 991 F.2d 781, 782, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting In re Rinehart, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)).

With these principles in mind, we consider the examiner's rejection and the appellants' arguments.

The examiner asserts, "Tamara discloses ... ink chamber R having a front end, a rear end, an ink inlet port disposed adjacent said rear end, an outlet port disposed adjacent said front end and an ink ejecting slit P extending along the front end of said ink chamber R ...." (Examiner's Answer at 3.) The "[a]ppellants contend that a claimed feature (the ink outlet port) is completely missing from Tamura's printing head 33." (Reply Br. at 4.)

Here, claims 1-4 specify in pertinent part the following limitations.

[I]nk chamber having a front end, a rear end, an ink inlet port disposed adjacent said rear end, an ink outlet port disposed adjacent said front end, and an ink ejecting slit extending along the front end of said ink chamber ... and an ink reservoir, disposed above said ink chamber and connected to said ink inlet port and said ink outlet port, for providing the liquid ink by gravity to said ink chamber

through said ink inlet port and for receiving the liquid ink from said ink chamber through said ink outlet port.

Accordingly, claims 1-4 require an ink chamber having an inlet port for receiving ink from an ink reservoir, a slit for ejecting some ink, and an outlet port for returning the rest of the ink to the reservoir.

The examiner fails to show a teaching or suggestion of the limitations in the applied prior art. Tamura discloses an ink recording head for printing on recording paper. "The tip of the recording head (1) where the slit-shaped ink splashing opening (P) is formed is pointed so that the position adjustment of the splashing ink is easier." Tamura Translation, p. 11. The recording head includes "an ink keeper (4) which stores liquid ink (Q) in its bottom." Id. at 11. "A shallow groove is formed ... from the ink keeper (4) to the ink splashing opening (P) so that an ink passage (R)... is formed." Id. The ink passage necessarily includes an ink inlet via which ink is fed from the ink keeper into the ink passage on its way to the splashing opening for printing. Although the ink passage includes an ink inlet, an ink outlet

for recirculating ink from the ink passage to the ink keeper is neither taught, suggested, nor necessary.

For its part, Barbero teaches an ink printing head that includes an ink reservoir and an ink container. "The reservoir **51** is connected to the container **34** by a hydraulic circuit comprising a feed tube **52**, a discharge tube **53** ...." Col. 5, ll. 3-5. Furthermore, the discharge tube is necessarily connected to an ink discharge port in the container.

The examiner fails to identify a sufficient suggestion to combine the teachings of the references. "[I]dentification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000) (citing In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457 (Fed. Cir. 1998)). "Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific

combination that was made by the applicant." Id. 55 USPQ2d at 1316 (citing In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984)).

Here, although Tamura discloses an ink keeper connected to an ink passage via an ink inlet port therein and Barbero discloses an ink reservoir connected to an ink container by an ink discharge port therein, the examiner fails to allege, let alone show, some motivation, suggestion, or teaching of the desirability of employing Barbero's ink discharge port in Tamura's ink passage. The examiner's reason for repositioning Tamura's ink inlet port, viz., to "produce[] indelible signs which are immediately dry and are formed of a uniform layer of ink[,]" (Examiner's Answer at 4), moreover, would not result from using Barbero's ink discharge port in Tamura's ink passage.

Because Tamura lacks an ink outlet port, and there is no evidence that Barbero's ink discharge port would have been desirable in the former reference's ink passage, we are not

persuaded that teachings from the prior art would have suggested the combination of Tamura and Barbero nor the limitations of an "ink chamber having a front end, a rear end, an ink inlet port disposed adjacent said rear end, an ink outlet port disposed adjacent said front end, and an ink ejecting slit extending along the front end of said ink chamber ... and an ink reservoir, disposed above said ink chamber and connected to said ink inlet port and said ink outlet port, for providing the liquid ink by gravity to said ink chamber through said ink inlet port and for receiving the liquid ink from said ink chamber through said ink outlet port." Therefore, we reverse the rejection of claims 1-4 as being obvious over Tamura in view of Barbero.

#### CONCLUSION

In summary, the rejection of claims 1-4 under § 103(a) is reversed.

REVERSED

JERRY SMITH	)	
Administrative Patent Judge	)	
	)	
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	)	
	)	BOARD OF PATENT
JOSEPH L. DIXON	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
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	)	
LANCE LEONARD BARRY	)	
Administrative Patent Judge	)	

LLB/dal

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