

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. 34

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YUN JUN HUH,
SUK BIN HAN,
and
JAE JEONG KIM

Appeal No. 1999-1674
Application No. 08/923,949

ON BRIEF

Before PAK, LIEBERMAN, and POTEATE, *Administrative Patent Judges*.
PAK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 1, 5, 15, 17 and 19. Claim 5 was amended subsequent to the final Office action dated June 9, 1998. Claims 6 through 14, the remaining claims in the above-identified application, stand withdrawn from consideration by the examiner as being directed to a non-elected invention.

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Claims 1 and 15 are representative of the subject matter on appeal and read as follows:

1. A semiconductor wafer cleaning apparatus comprising:

an outer tank;

a cleaning tank provided within said outer tank;

a wafer carrier provided within said cleaning tank;

a plurality of jet nozzles directed toward said wafer carrier, each of said plurality of jet nozzles including a plurality of jet nozzle holes formed lengthwise therethrough, wherein a first of the plurality of jet nozzles is located at a bottom center of the cleaning tank with the plurality of jet nozzle holes facing upward and a second of the plurality of jet nozzles is located at both sides of the cleaning tank with the plurality of jet nozzle holes facing a center of the wafer carrier at an oblique angle;

a main pipe connected to said jet nozzles;

a circulating pump connected to said main pipe and said outer tank for circulating a cleansing solution from said outer tank, through said main pipe, said jet nozzles, and said cleaning tank, and back to said outer tank, the cleansing solution being directly sprayed from said jet nozzles onto left, right, and bottom sides of the wafer; and

a filter for filtering said circulated cleansing solution.

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15. A semiconductor wafer cleaning apparatus comprising:

a cleaning environment having a wafer carrier; and

a plurality of jetting means for jetting a liquid against a wafer within said cleaning environment, each said jetting means including a plurality of jet nozzle holes, wherein a first of the plurality of jetting means is located at a bottom center of the cleaning tank with the plurality of jet nozzle holes facing upward and a second of the plurality of jetting means is located at both sides of the cleaning tank with the plurality of jet nozzle holes facing a center of the wafer carrier at an oblique angle, wherein said liquid is directly sprayed from said jetting means onto left, right, and bottom sides of the wafer.

The prior art references relied upon by the examiner are:

Seiichiro	4,753,258	Jun. 28, 1988
Hayami et al. (Hayami)	5,474,616	Dec. 12, 1995
Ando	5-182946	Jul. 23, 1993

(Published Japanese Patent Application)

Claims 1, 5, 15, 17 and 19 stand rejected under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Seiichiro, Ando, and Hayami.

We reverse the aforementioned Section 103 rejection for the reasons set forth in the Brief and the Reply Brief. We add the following primarily for emphasis.

As evidence of obviousness of the claimed subject matter under 35 U.S.C. § 103, the examiner relies on the combined teachings of Seiichiro, Hayami, and Ando. The examiner finds that Seiichiro teaches "a wafer cleaning apparatus comprising a

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tank, a wafer carrier, a single first jet nozzle in the bottom [center] of the tank and a plurality of second jet nozzles " See the final Office action dated June 9, 1998, page 2, together with the Answer, page 3. These jet nozzles, which are particularly placed at the bottom of the tank, are used to generate up and down swirling motion in the cleaning liquid in the tank. See Seiichiro, column 3, lines 1-15, together with Seiichiro's Figures 2 and 3. The purpose of this arrangement is to eliminate zones of poor circulation of the cleaning liquid in the wafer cleaning tank. See column 1, lines 30-45.

Recognizing the absence of the teaching on the part of Seiichiro regarding the claimed nozzle arrangement, the examiner relies on the disclosures of Hayami and Ando. See the final Office action dated June 9, 1998, page 2, together with the Answer, page 3. The examiner asserts that both Hayami and Ando teach that the employment of the claimed plurality of first jet nozzles in the bottom center of the tank is known. See the final Office action dated June 9, 1998, pages 2-3, together with the Answer, page 3. The examiner also asserts that Hayami teaches that the employment of the claimed plurality of second jet nozzles on the sides of the tank with their openings facing the

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center of a wafer carrier at an oblique angle is known. See the final Office action dated June 9, 1998, page 2, together with the Answer, page 3.

Based on the above assertions, the examiner concludes that it would have been obvious to substitute the nozzle arrangement taught by Hayami and Ando for the nozzle arrangement described in Seiichiro's wafer cleaning apparatus.

From our perspective, the examiner's conclusion is flawed. As pointed out by the appellants (Reply Brief, pages 3 and 4), Hayami does not teach the claimed plurality of second jet nozzles on the sides of a wafer cleaning tank with their openings facing the center of a wafer carrier at an oblique angle.

Even if we were to agree with the examiner that Hayami teaches the claimed particularly placed plurality of second jet nozzles, the examiner has not pointed to any suggestion or motivation in Seiichiro and/or Hayami to use such particularly placed plurality of second jet nozzles in the wafer cleaning apparatus described in Seiichiro. The examiner simply has not demonstrated that modifying the nozzle arrangement of Seiichiro as proposed by the examiner would allow the elimination of zones

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of poor circulation of the wafer cleaning liquid in the tank as required by Seiichiro. To modify the nozzle arrangement contrary to Seiichiro's purpose is to destroy the invention on which Seiichiro is based. See *Ex parte Hartmann*, 186 USPQ 366, 367 (Bd. App. 1974).

In view of the foregoing, we reverse the examiner's decision rejecting claims 1, 5, 15, 17 and 19 under 35 U.S.C. § 103.

REVERSED

CHUNG K. PAK)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
PAUL LIEBERMAN)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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)	
LINDA R. POTEATE)	
Administrative Patent Judge)	

CKP:hh

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