

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

Paper No. 36

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ERNST HENDRIK AUGUST GRANNEMAN,
ALBERT HASPER and JAN ZINGER

Appeal No. 2002-1760
Application No. 09/355,509

HEARD: FEBRUARY 19, 2003

Before WARREN, OWENS and TIMM, *Administrative Patent Judges*.
OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal is from the final rejection of claims 8-14, 20-32, 34 and 35, which are all of the claims remaining in the application.

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THE INVENTION

The appellants' claimed invention is directed toward semiconductor processing apparatus having multiple reactors and a boat transfer mechanism in the same processing chamber. Claim 31 is illustrative:

31. A semiconductor processing system for batch processing of substrates in boats, comprising a substrate handling chamber, a boat transfer mechanism occupying a defined footprint within a process chamber sealable from the substrate handling chamber, at least two reactor vessels occupying the same defined footprint, and a boat lift mechanism for lifting boats from the boat transfer mechanism into one of the reactor vessels.

THE REFERENCES

Nishi	5,178,639	Jan. 12, 1993
Zinger	5,407,449	Apr. 18, 1995
Ohsawa	5,464,313	Nov. 7, 1995

THE REJECTIONS

Claims 8-14, 20-32, 34 and 35 stand rejected under 35 U.S.C. § 103 as being unpatentable over Zinger alone or in view of Ohsawa or Nishi.

OPINION

We reverse the aforementioned rejections.

Rejection over Zinger

The claims on appeal include three independent claims, i.e., claims 8, 20 and 31, each of which claims a semiconductor processing apparatus. Claim 8 requires a processing chamber

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containing two reactors, a turntable, and devices for transferring semiconductor wafers between each reactor and the turntable. Claim 20 requires a two-level processing chamber having first and second reactors on the upper level, first and second elevators for lifting a boat from first and second positions on the lower level into, respectively, the first and second reactors, and a boat transfer mechanism on the lower level for transferring a boat within the processing chamber from at least the first position to at least the second position on the lower level. Claim 31 requires a processing chamber having therein a boat transfer mechanism, at least two reactors occupying the same defined footprint as the boat transfer mechanism, and a boat lift mechanism for lifting boats from the boat transfer mechanism into one of the reactors.

Zinger discloses a semiconductor processing apparatus which differs from that claimed in the appellants' independent claims only in that Zinger's processing chambers (10, 11 and 12) each contain only one reactor and lift mechanism. Zinger's processing chambers each have three compartments and a rotary table (14) for transferring wafers among the compartments (figure 1). The compartments are 1) a compartment for loading and unloading wafer carriers by moving them between a transfer station (8) and the compartment, 2) a compartment containing a reactor above the

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rotary table, and a device (17) for moving a wafer boat from the rotary table into the reactor and from the reactor to the rotary table, and 3) a cooling compartment (col. 2, lines 35-64; figure 1).

Thus, to arrive at the appellants' claimed apparatus, Zinger's apparatus must be modified either by including a second reactor in the reactor/lift device compartment or by including in the cooling compartment an upper level containing a reactor.

The examiner argues, in reliance upon *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960), that an additional reactor in Zinger's processing chamber would be a mere duplication of parts and, therefore, would have been obvious to one of ordinary skill in the art (answer, page 6).

The court in *Harza* stated that the only difference between the reference's structure for sealing concrete and that of Harza's claim 1 was that the reference's structure had only a single rib (i.e., arm) on each side of a web, whereas the claim required a plurality of such ribs. See *Harza*, 274 F.2d at 671, 124 USPQ at 380. The court stated that "[i]t is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced, and we are of the opinion that such is not the case here." *Id.*

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The examiner does not compare the facts in *Harza* with those in the present case and explain why, based upon this comparison, the legal conclusion in the present case should be the same as that in *Harza*. Instead, the examiner relies upon *Harza* as establishing a *per se* rule that duplication of parts is obvious. As stated by the Federal Circuit in *In re Ochiai*, 71 F.3d 1565, 1572, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995), "reliance on *per se* rules of obviousness is legally incorrect and must cease."

For a *prima facie* case of obviousness to be established, the teachings from the prior art itself must appear to have suggested the claimed subject matter to one of ordinary skill in the art. See *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976). The mere fact that the prior art could be modified as proposed by the examiner is not sufficient to establish a *prima facie* case of obviousness. See *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992). The examiner must explain why the prior art would have suggested to one of ordinary skill in the art the desirability of the modification. See *Fritch*, 972 F.2d at 1266, 23 USPQ2d at 1783-84.

The examiner argues that one of ordinary skill in the art would have included an additional reactor in Zinger's processing chamber to permit simultaneous heat treatment of wafers in two

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boats and thereby increase the production capacity of the processing chamber (answer, pages 6-7). Zinger, however, uses multiple one-reactor processing chambers rather than multiple reactors within each processing chamber (figure 1). The examiner has not explained why the Zinger reference itself would have fairly suggested, to one of ordinary skill in the art, the desirability of using multiple reactors within a processing chamber rather than using Zinger's multiple one-reactor processing chambers.

For the above reasons we conclude that the examiner has not established a *prima facie* case of obviousness of the appellants' claimed invention.¹

Rejection over Zinger in view of Ohsawa or Nishi

The examiner argues (answer, pages 5-6):

Ohsawa teaches a heat treatment apparatus 30 (Fig. 1) comprising a number (two) [of] heat treatment units 3A, 3B which are arranged horizontally and which load wafer boats 33 containing wafers W from a lower level using a boat elevator 32. The heat treatment unit includes heat treatment furnaces 31 (Abstract and column 4, lines 3-27) [.]

Nishi also teaches a heat treating apparatus (Figs. 1,2) comprising a plurality of vertical heat-treating furnaces 30 arranged in parallel for heat

¹ Since no *prima facie* case of obviousness has been established, we need not address the evidence of commercial success relied upon by the appellants. See *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); *Rinehart*, 531 F.2d at 1052, 189 USPQ at 147.

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treating of multiple sets of wafers simultaneously
(Abstract and column 3, lines 37-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the multiple reactor mechanism as taught by Ohsawa or Nishi in the processing chamber of Zinger in order to simultaneously treat more than one wafer in the processing chamber.

The examiner's argument actually is the same as that in the rejection over Zinger alone, i.e., that it would have been obvious to one of ordinary skill in the art to use multiple reactors in Zinger's processing chambers to simultaneously treat wafers in each reactor. The examiner merely relies upon Ohsawa and Nishi as evidence that semiconductor processing apparatus having multiple reactors were known in the art.

The apparatus of Ohsawa and Nishi differ substantially from that of Zinger, and the examiner does not rely upon any teaching in Ohsawa or Nishi for a suggestion to use the multiple reactors of these references in Zinger's processing chamber. Accordingly, for this reason and the reasons given above regarding the rejection over Zinger, we conclude that the examiner has not established a *prima facie* case of obviousness of the appellants' claimed invention over the combined teachings of Zinger and Ohsawa or Nishi.

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DECISION

The rejections of claims 8-14, 20-32, 34 and 35 under 35 U.S.C. § 103 over Zinger alone or in view of Ohsawa or Nishi are reversed.

REVERSED

CHARLES F. WARREN)	
Administrative Patent Judge)	
)	
)	
)	
)	BOARD OF PATENT
TERRY J. OWENS)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
CATHERINE TIMM)	
Administrative Patent Judge)	

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