

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(2) is not binding precedent of the Board.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. 33

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TUGRUL YASAR,
RODNEY L. ROBINSON,
DANIEL DEYO
and MARIAN ZIELINSKI

Appeal No. 1997-3515
Application No. 08/390,226

HEARD: MAY 17, 2000

Before ABRAMS, McQUADE and BAHR, **Administrative Patent Judges**.

ABRAMS, **Administrative Patent Judge**.

DECISION ON APPEAL

This is an appeal from the decision of the examiner
finally rejecting claims 1-23, which constitute all of the
claims of record in the application.

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The appellants' invention is directed to a transport system for wafer processing. The claims before us on appeal have been reproduced in an appendix to the Brief.

THE REFERENCES

The references relied upon by the examiner to support the final rejection are:

Okano <i>et al.</i> (Okano) 1985	4,526,643	Jul. 2,
Belna 1986	4,624,617	Nov. 25,
Kita <i>et al.</i> (Kita) 1988	4,766,993	Aug. 30,
Kemmerer <i>et al.</i> (Kemmerer) 1988	4,793,911	Dec. 27,
Kawaguchi <i>et al.</i> (Kawaguchi) 31, 1989	4,800,818	Jan.
Bloomquist <i>et al.</i> (Bloomquist) 1989	4,834,855	May 30,
Norman 1992	5,110,249	May 5,

THE REJECTIONS

The following rejections stand under 35 U.S.C. § 103:¹

(1) Claims 1-4, 6-13 and 15-19 on the basis of either Norman or Bloomquist in view of Belna, Kita and Kawaguchi.

(2) Claims 5, 14 and 20-23 on the basis of either Norman

¹A rejection of the claims as being unpatentable over Flint in view of Belna, Kita and Kawaguchi was withdrawn in the Examiner's Answer.

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or Bloomquist in view of Belna, Kita, Kawaguchi, Kemmerer
and Okano.

Rather than attempt to reiterate the examiner's full
commentary with regard to the above-noted rejection and the

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conflicting viewpoints advanced by the examiner and the appellants regarding it, we make reference to the Examiner's Answer and to the Appellants' Brief and Reply Brief.

OPINION

The test for obviousness is what the combined teachings of the prior art would have suggested to one of ordinary skill in the art. **See, for example, *In re Keller***, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). In establishing a *prima facie* case of obviousness, it is incumbent upon the examiner to provide a reason why one of ordinary skill in the art would have been led to modify a prior art reference or to combine reference teachings to arrive at the claimed invention. **See *Ex parte Clapp***, 227 USPQ 972, 973 (Bd. Pat. App. & Int. 1985). To this end, the requisite motivation must stem from some teaching, suggestion or inference in the prior art as a whole or from the knowledge generally available to one of ordinary skill in the art and not from the appellant's disclosure. **See, for example, *Uniroyal, Inc. v. Rudkin-Wiley Corp.***, 837 F.2d 1044, 1052, 5 USPQ2d 1434,

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1052 (Fed. Cir.), *cert. denied*, 488 U.S. 825 (1988).

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The Rejection Of Claims 1-4, 6-13 And 15-19

The invention recited in these claims is directed to improvements in transport systems for moving wafers through a series of adjacent housings that define a wafer processing line and which are separated by isolation valves that are opened and closed to permit wafers to be transported to and from each of the series of housings. According to the appellants, the prior art drive systems were mechanical in nature, utilizing screws, racks, pinions, gears, nuts and the like, which depend upon friction to operate and generate particles and contamination, the result of which is to impair the cleanliness of the operations that are performed upon the wafers (specification, page 2). As manifested in independent claim 1, the appellants' invention comprises a track that is divided into discontinuous sections by the isolation valves, a wafer carrier adapted to carry a plurality of wafers and mounted on wheels which engage the track, a plurality of carrier magnets attached to the carrier along the length thereof and substantially parallel with the track, a plurality of magnetic drive units located outside of the housings and

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arranged substantially parallel with the track with each unit being associated with one of the housings and its track segment and including means for imposing at least one magnetic field within the respective housing to magnetically translate the carrier through the housing along the respective track segment via the wheels, and a controller for opening and closing the valves and moving the magnetic fields according to a predetermined sequence. Independent claim 16 sets forth the invention in slightly different terms, but contains the same limitations.

The examiner's position is that all of the structure recited in claim 1 is found in either Norman or Bloomquist, except for the magnetic drive system, but that replacing the mechanical drive systems disclosed in these two references would have been obvious to one of ordinary skill in the art in view of the teachings of Belna, Kita and Kawaguchi. As we assess the rejection, the dispositive issue is whether one of ordinary skill in the art would have found suggestion in the applied prior art to replace the mechanical transport mechanisms disclosed in Norman and Bloomquist with the

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magnetic system recited in the two independent claims. At the outset, we point out that such suggestion does not emanate from either of the two primary references which, from our perspective, appear to be the types of systems over which the appellants believe their invention to be an improvement.

Belna, the first of the three secondary references applied by the examiner, discloses a wafer transportation apparatus in which the sequential energization of magnetic systems levitates a platform carrier upon which a wafer is positioned, linearly propels it along a track to the next station, and then lowers the wafer onto another platform. However, Belna does not disclose housings or valves, so it clearly would not have suggested to one of ordinary skill in the art that one of the components of a magnetic transport system be positioned outside of the housings and the other inside the housing. Nor is there a teaching of utilizing a magnetic transport system to move a carrier through valves. Also, the wafer carrier is levitated for movement, and is not equipped with wheels, and the carrier is not disclosed as moving over discontinuous segments of track nor is there

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evidence to indicate that it is capable of doing so. In view of these factors, it is our conclusion that the artisan would not have found a suggestion in Belna to modify the systems disclosed in either of the primary references in such a manner as to meet the terms of claim 1, that is, to place one of the magnetic components on a wheeled wafer carrier positioned inside the respective housings while locating the other magnetic component outside of the housings and "associated with one of the housings and the track segment associated therewith," so that the carrier moves "on wheels through each housing without a mechanical coupling between the respective drive unit located outside the housing and the carrier located inside the housing."

These shortcomings are not overcome by Kita. This reference discloses a system in which a wheeled carrier is moved along a track by conventional drive motors connected to its wheels. Suspended from (or supported above) the carrier by magnetic levitation is a pallet upon which the wafers to be treated are positioned. The pallet, the wafers, and one of the magnetic elements for effecting levitation are located

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inside a controlled atmosphere housing. The carrier, the track and the other magnetic levitation elements are located outside of the housing. The magnetic means does not propel the carrier; its purpose is only to levitate the pallet. No discontinuous track segments are disclosed, nor are a plurality of housings and valves between housings with one track segment being associated with each housing. From our perspective, then, Kita would not have taught one of ordinary skill in the art to propel a wheeled carriage by magnetic means along a segmented track through housings by means of a system in which one magnetic element is located within the housing and the other outside the housing.

Nor is the rejection rescued by adding the teachings of Kawaguchi. This reference is directed to a compound motor drive system in which a wheeled carrier moving on a track is swiftly driven to a new station and coarsely positioned thereat by means of a linear motor, before being precisely positioned by a step motor. The extent of its applicable teachings is that one of the elements of a magnetic drive motor can be on a wheeled carrier. The mere fact that

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the prior art structure could be modified does not make such a modification obvious unless the prior art suggests the desirability of doing so. **See In re Gordon**, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). In the present case, it is not apparent to us from the examiner's explanation of the rejection how the teachings of the several references would have melded together to suggest the claimed construction to one of ordinary skill in the art. Left to our own devices, we fail to perceive any teaching, suggestion or incentive in the applied references which would have motivated an artisan to modify the Norman or Bloomquist arrangements in such a fashion as to meet the terms of claim 1. From our perspective, the only suggestion for putting selected pieces from the five references together in the manner proposed by the examiner is found in the luxury of the hindsight accorded one who first viewed the appellants' disclosure. This, of course, is not a proper basis for a rejection. **See In re Fritch**, 972 F.2d 1260, 1264, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992).

We therefore conclude that the combined teachings of the

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five applied references fail to establish a *prima facie* case of obviousness with regard to the subject matter recited in independent claim 1, and we will not sustain the rejection of claim 1 or of claims 2-4, 6-13 and 15, which depend therefrom. We also will not sustain the rejection of independent claim 16 and dependent claims 17-19, for claim 16 recites the invention in somewhat different terms than claim 1, but contains essentially the same limitations as are present there, which we concluded above were not taught or suggested by the applied references.

The Rejection Of Claims 5, 14 And 20-23

This rejection is based upon the references applied against claim 1 *et al.*, taken further in view of Kemmerer and Okano. Claim 5 depends from claim 1 and adds the limitation of utilizing for the magnetic drive unit a plurality of magnets mounted on an endless conveyor belt oriented parallel to the track and being of dimension less than that of the housing with which it is associated as measured along the track. Okano was cited for its disclosure of a plurality of magnets arranged on an endless conveyor located on the outside

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of the housing of an etching apparatus. However, the function of these magnets is not to move a carriage or the like, but to act upon high density areas of plasma to cause them to move over the work piece in such a manner as to equalize their effect thereon. It therefore is our view that Okano has little relevance with regard to the structure set forth in claim 1, and fails to overcome the deficiencies pointed out above with regard to the teachings of the five references as applied against claim 1.

Kemmerer pertains to rotating by magnetic means a planar member upon which a plurality of wafers are mounted. Such structure is not present in claims 1 or 5, and we therefore see no applicability of the teachings of Kemmerer to these claims.

For the reasons set forth above, we will not sustain the rejection of dependent claim 5.

Claim 14 is dependent from claim 1 by way of claims 10 and 13. It recites a carrier magnet mounted on a planar member (introduced in claim 13) and a rotational magnetic drive unit located outside the housing to rotate the planar

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member. As we explained above with regard to claim 5, neither Okano nor Kemmerer overcome the problem we found with the five references applied against claim 1. Thus, we also will not sustain the rejection of claim 14, which is dependent from claim 1.

Claim 20 is an independent claim that recites some of the basic structures of the invention, but focuses upon rotating by magnetic means a rotatable pallet inside the housing upon which a plurality of wafers are mounted for treatment. Specifically recited is a rotational magnetic drive unit "located outside the housing" to impose a magnetic field through one of the walls of the housing to rotate the pallet without a mechanical coupling between the magnetic drive unit outside the housing and the pallet inside the housing. The examiner acknowledges that both of the primary references (Norman and Bloomquist) use mechanical means to rotate pallets upon which the wafers are carried, and opines that it would have been obvious to replace this with magnetic means of the type recited in claim 20 in view of the teachings of Kemmerer. We do not agree.

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As pointed out above, claim 20 calls for the magnetic drive unit to be outside the housing and effect rotation through the wall of the housing without mechanical coupling with the rotatable pallet. However, in the Kemmerer arrangement, the entire magnetic drive system is located inside the housing. This being the case, the reference would not have suggested the claimed structure to one of ordinary skill in the art. Consideration of the teachings of the other references applied against claim 20, which have been discussed above, does not alter this conclusion.

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A *prima facie* case of obviousness therefore has not been established with regard to the subject matter of claim 20, and we will not sustain the rejection. Nor will we sustain the rejection of claims 21 -23, which depend from claim 20.

SUMMARY

Neither rejection is sustained.

The decision of the examiner is reversed.

REVERSED

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NEAL E. ABRAMS))
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOHN P. McQUADE)	
Administrative Patent Judge)	APPEALS AND
)	
)	INTERFERENCES
)	
JENNIFER D. BAHR)	
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NEA:hh

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