

The opinion in support of the decision being entered today is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ROBERT B. LOWRANCE and HOWARD GRUNES

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Appeal 2006-3349  
Application 09/908,360  
Technology Center 3600

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Decided: July 24, 2007

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Before MURRIEL E. CRAWFORD, JENNIFER D. BAHR, and STUART S. LEVY, *Administrative Patent Judges*.

BAHR, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Robert B. Lowrance and Howard Grunes (Appellants) appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 80-99, the only pending claims. We have jurisdiction over this appeal under 35 U.S.C. § 6 (2002).

Appellants' claimed invention is directed to an apparatus for transferring objects, and more particularly, to an apparatus including independent robot assemblies for simultaneously and independently manipulating multiple objects, such as semiconductor wafers (Specification [0002]). Independent claims 80 and 86 are representative of the claimed invention and read as follows:

80. In a system for processing semiconductor wafers, with a plurality of radially arranged processing chambers, an apparatus, comprising:

a two robot drive hub with four coaxial shafts along a vertically oriented longitudinal axis;

a first robot mounted perpendicular to the longitudinal axis of said drive hub, coupled to a first and to a second coaxial shaft, and with a first carrier blade for carrying semiconductors;

a second robot mounted perpendicular to the longitudinal axis of said drive hub, coupled to a third and to a fourth coaxial shaft, and with a second carrier blade for carrying semiconductors;

wherein said first robot moves said first carrier blade rotationally and radially in a first horizontal plane for carrying semiconductor wafers to and from the plurality of processing chambers; and

wherein said second robot moves said second carrier blade in a second plane parallel to said first carrier blade, and independent of said first carrier blade movement, for carrying semiconductor wafers to and from the plurality of processing chambers.

86. An apparatus for transferring substrates, comprising:

a two robot drive hub with four coaxial shafts along a vertically oriented longitudinal axis;

an upper robot assembly attached to the two robot drive hub, the upper robot assembly including first and second arm systems and a first substrate carrier, wherein the first and second arm systems are each attached to the first substrate carrier;

a lower robot assembly attached to the two robot drive hub, the upper robot assembly including third and fourth arm systems and a second substrate carrier, wherein the third and fourth arm systems are each attached to the second substrate carrier;

an upper drive mechanism for driving said upper robot assembly; and

a lower drive mechanism for driving said lower robot assembly;

wherein the upper robot assembly and lower robot assembly move around a central axis.

The Examiner relies upon the following as evidence of unpatentability:

Fyler	US 4,712,971	Dec. 15, 1987
Uehara	US 5,083,896	Jan. 28, 1992
Kojima (as translated)	JP 4-87785	Mar. 19, 1992
Hendrickson	US 5,180,276	Jan. 19, 1993
Hofmeister '014	US 5,569,014	Oct. 29, 1996
Grunes	US 5,678,980	Oct. 21, 1997
Hofmeister '590	US 5,720,590	Feb. 24, 1998

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Appellants seek review of the following rejections:

- claims 80 and 82-85<sup>1</sup> under 35 U.S.C. § 102(b) as anticipated by Kojima,
- claims 80 and 82-99 under 35 U.S.C. § 103(a) as unpatentable over Kojima in view of Hofmeister ‘590 and as unpatentable over Kojima in view of Hofmeister ‘014,
- claim 81 under 35 U.S.C. § 103(a) as unpatentable over Kojima in view of Uehara and as unpatentable over Kojima in view of Hofmeister ‘590 or Hofmeister ‘014, further in view of Uehara,
- claims 86-92 and 94-99 under 35 U.S.C. § 103(a) as unpatentable over Kojima and Hendrickson,
- claim 93 under 35 U.S.C. § 103(a) as unpatentable over Kojima in view of Hendrickson and Fyler,<sup>2</sup> and
- claims 80 and 82-99 under the judicially-created doctrine of obviousness-type double patenting as unpatentable over claims 1 and 2 of Grunes in view of Kojima.<sup>3</sup>

The Examiner provides reasoning in support of the rejections in the Answer (mailed April 4, 2006). Appellants present opposing arguments in the Appeal Brief (filed January 17, 2006) and Reply Brief (filed June 5, 2006).

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<sup>1</sup> The Examiner withdrew this rejection as to claim 86 (Answer 3).

<sup>2</sup> The alternative rejection of claim 93 as unpatentable over Hendrickson in view of Kojima and Fyler has been withdrawn (Answer 3).

<sup>3</sup> The Examiner’s reference to “Japanese reference 4-87789” (Final Rejection 6 and Answer 7) in the statement of the rejection appears to be an inadvertent error.

*The double patenting rejection*

Appellants do not contest the merits of the Examiner’s rejection of claims 80 and 82-99 under the judicially-created doctrine of obviousness-type double patenting (Answer 7) in either their Appeal Brief or their Reply Brief. Appellants filed a Terminal Disclaimer on October 17, 2005 in an attempt to obviate the rejection. As noted by the Examiner (Answer 2), the Terminal Disclaimer was not accepted, and therefore is not effective to obviate the rejection, because it was not signed by an attorney of record in the application. Appellants do not challenge the Examiner’s refusal to accept the Terminal Disclaimer, instead offering that “[a] subsequent Terminal Disclaimer signed by an attorney of record will be filed upon indication of allowable subject matter” (Reply Br. 3). In light of the absence of either a substantive argument on the merits of the rejection or an accepted Terminal Disclaimer, we summarily sustain the obviousness-type double patenting rejection of claims 80 and 82-99.

*The anticipation and obviousness rejections*

All of the Examiner’s anticipation and obviousness rejections are grounded in part on the Examiner’s determination that Kojima discloses “a two robot drive hub with four coaxial shafts along a vertically oriented longitudinal axis” as called for in Appellants’ independent claims 80 and 86 (Answer 4, 7). Appellants argue that Kojima does not disclose such a two robot drive hub (Appeal Br. 7-8) and that none of the other applied references makes up for this perceived deficiency (Appeal Br. 8-11). Appellants allege no other error in the Examiner’s rejections. Accordingly, the only issue in this appeal is whether Kojima discloses “a two robot drive

hub with four coaxial shafts along a vertically oriented longitudinal axis” as called for in Appellants’ independent claims 80 and 86.

The following facts are pertinent to the issue presented to us in this appeal.

1. A “hub” is generally understood to be “the center part of a wheel, etc., the part fastened to the axle, or turning on it” or “a center of interest, importance, or activity” *Webster's New World Dictionary* 682 (David B. Guralnik ed., 2nd Coll. Ed., Simon & Schuster, Inc. 1984).
2. Appellants disclose that, in a preferred embodiment, an upper robot is stacked above a lower robot “and the two robots are mounted concentrically to a drive hub to allow simultaneous transfer of two wafers between a transfer chamber and one or more process chambers” (Specification [0029]). Appellants describe, in the embodiment of Figs. 1-4, a central hub 23 for the upper robot 14 to which first and second drive arms 21, 22 are coupled for rotation about the hub 23 (Specification [0032]) and a central hub 53 for the lower robot 16 to which first and second drive arms 51, 52 are coupled for rotation about the hub 53 (Specification [0042]). As illustrated in Fig. 1, wherein the lead line for reference numeral 23 points to the flange of housing 1008, hub 23 includes at least the housing 1008 to which motors 1004, 1006 and hence shaft 1030 are attached (Specification [0034] and [0035]). In the embodiment of Figs. 1-4, the drives of the upper and lower robots are not connected to one another, except through the transfer chamber walls (cover and base) 12a, 12b and housings 1008, 1008’. Appellants do not specifically use the term “hub” in describing the second embodiment

(Figs. 5-7), but do indicate that the second embodiment is like the first, except that a central column 120 spans the gap between the base 12b and cover 12a of the transfer chamber 112 (Specification [0046]). In Appellants' third embodiment (Figs. 8-10), the motors 1004, 1006 for driving the upper robot 14 are suspended from the transfer chamber below the motors 1004', 1006' for driving the lower robot 16 and an additional pair of concentric shafts extend from the upper robot motors 1004, 1006 through the center of the lower robot motors 1004', 1006' and the hub 1100 (see Fig. 9), which, like the central column 120 of the second embodiment, spans the gap between the base and cover of the transfer chamber (Specification [0049]). The fourth embodiment (Figs. 11-12) utilizes a central hub 210 including bearings 228a, 228b and secondary bearings 232a, 232b. The drive arms 214a, 214b of the robots are pivotally connected to drive blocks 226a, 226b in outer races of bearings 228a, 228b and the secondary arms 216a, 216b are pivotally connected to secondary blocks 230a, 230b supported on secondary bearings 232a, 232b (Specification [0052]).

3. Appellants' Specification does not provide an express definition of the term "hub." Moreover, Appellants do not offer a definition of "hub" in their Appeal Brief or Reply Brief.
4. As best seen in Figs. 2 and 3, Kojima's substrate transfer device comprises upper and lower robots 32, 33 each including an arm part 31 coupled to a drive part 30. Each drive part 30 includes two motors 41, 42 and two concentric drive axles 43, 44 for rotating and articulating arm part 31. Further, as illustrated in Fig. 2, the drive

axles 43, 44 of the upper robot 32 are coaxial with the drive axles 43, 44 of the lower robot 33. Accordingly, Kojima's two robot drive assembly includes four coaxial shafts (drive axles 43, 44 of upper robot 32 and drive axles 43, 44 of lower robot 33) oriented along a vertically oriented longitudinal axis. The drive components (motors 41, 42, drive axles 43, 44, etc.) of the upper and lower robots 32, 33 are connected to one another through the cases 40 of the upper and lower robots and the upper and lower walls of the transfer chamber 10 to form a drive assembly. (Kojima Translation 4-5.)

## DISCUSSION

We determine the scope of the claims in patent applications “not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction ‘in light of the specification as it would be interpreted by one of ordinary skill in the art.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316, 75 USPQ2d 1321, 1329 (Fed. Cir. 2005) (en banc) (*quoting In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827, 1830 (Fed. Cir. 2004)). We must be careful not to read a particular embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. *See Superguide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875, 69 USPQ2d 1865, 1868-69 (Fed. Cir. 2004) (“Though understanding the claim language may be aided by the explanations contained in the written description, it is important not to import into a claim limitations that are not a part of the claim. For example, a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.”)

The challenge is to interpret claims in view of the specification without unnecessarily importing limitations from the specification into the claims.

*See E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003).

Appellants' Specification does not expressly define the term "hub" (Fact 3) and gives no indication that this term is being used in any manner different from its ordinary and customary meaning (Fact 1). Consistent with the disclosure of a hub in Appellants' preferred embodiments, which hub includes the housing structure connecting the robot drive components to the upper and lower walls of the transfer chamber (Fact 2), one of ordinary skill in the art would understand "a two robot drive hub" as recited in Appellants' independent claims 80 and 86 to be central structure including and housing the drives for two robots. Neither Appellants' Specification nor the argument in Appellants' Appeal Brief and Reply Brief gives any indication that the "two robot drive hub" language in claims 80 and 86 requires a common shaft or coextensive drive shafts for the two robots or is limited, for example, to the third embodiment, wherein the drive shafts of one of the robots extend through lumens in the drive shafts of the other robot. In fact, Appellants' summary of the claimed subject matter (Appeal Br. 3) makes reference to Fig. 1, an embodiment which does not have coextensive drive shafts for the two robots, in discussing the two robot drive hub with four coaxial shafts along a vertically oriented longitudinal axis.

Kojima's motors 41, 42, drive axles 43, 44 and cases 40, connected to transfer chamber 10, form central structure including and housing the drives for two robots 32, 33, with the drive axles 43, 44 for robot 32 and drive axles 43, 44 for robot 33 sharing a common axis and thus being four coaxial shafts

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along a vertically oriented longitudinal axis. We therefore conclude that Kojima comprises “a two robot drive hub with four coaxial shafts along a vertically oriented longitudinal axis” as recited in claims 80 and 86. Appellants thus have not demonstrated that the Examiner erred in rejecting claims 80-89 under 35 U.S.C. §§ 102 and 103. All of the rejections under 35 U.S.C. §§ 102 and 103 are sustained.

#### SUMMARY

The decision of the Examiner to reject claims 80-99 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2006).

AFFIRMED

JRG

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