UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FREDERICK W. KERN, JR.

Appeal 2008-0495
Application 11/004,876
Technology Center 1700

Decided: March 28, 2008

Before CHUNG K. PAK, PETER F. KRATZ, and
LINDA M. GAUDETTE, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 29-40, the only claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

The invention relates to gripping mechanisms for holding a workpiece during fabrication. The mechanisms are said to provide reduced process

variations and contamination during wafer fabrication. Spec. [0016].

Claim 29 is illustrative of the invention and is reproduced below:

> 29. A system for processing a workpiece, the system comprising:
>
> a plurality of moveable gripping mechanisms being moveable between a holding position and a releasable position with respect to a workpiece;
>
> a means for controlling alternating movement of moveable gripping mechanisms of the plurality of moveable gripping mechanisms away from and into contact with the workspace during processing to allow processing fluids to freely flow, unimpeded, from a surface of the workpiece at previous locations of the released gripping mechanisms;
>
> a means for accelerating the workpiece while the workpiece is gripped with all of the plurality of moveable gripping mechanisms; and
>
> a means for alternately moving the plurality of moveable gripping mechanisms between gripping positions and release positions after the workpiece has reached a desired speed.

The Examiner relies on the following prior art references to show unpatentability:

Olgado	6,689,418 B2	Feb. 10, 2004
Shimbara	2004/0159343 A1	Aug. 19, 2004

The Examiner made the following rejections:

1. Claims 29-40 under 35 U.S.C. § 102(e) as anticipated by Shimbara.
2. Claims 29-40 under 35 U.S.C. § 103(a) as unpatentable over Olgado.

Rejection of claims 29-40 under 35 U.S.C. § 102(e) as anticipated by Shimbara

Appellant relies on a declaration under 37 C.F.R. § 1.131 ("Rule 131 Declaration") to antedate, and thus remove Shimbara as prior art. The Examiner contends that Appellant's Rule 131 Declaration does not include sufficient evidence of each of the means recited in appealed claim 29 and, therefore, fails to establish a date of conception before the July 21, 2003 effective date of Shimbara. (Answer 5-6). The following issue is presented: Is Appellant's Rule 131 Declaration sufficient to antedate Shimbara? We determine that it is not.

A printed publication may be sworn behind under 37 C.F.R. § 1.131 by a showing of facts sufficient to establish a completion of the invention in this country before the date of the printed publication, unless the date of the publication is more than one year prior to the date on which the application was filed in this country. The "invention" refers to the subject matter of the claims. Therefore, in order to assess the sufficiency of Appellant's Rule 131 Declaration, we must first answer the question: What is the invention claimed? *In re Hiniker Co*., 150 F.3d 1362, 1369 (Fed. Cir. 1998) ("[T]he name of the game is the claim.").

Appellant and the Examiner agree that the appealed claims are drafted in means-plus-function format.[1] Claims containing "means" language are construed as limited to the "corresponding structure" disclosed in the written description in the Specification and "equivalents" thereof. *In re Donaldson Co*., 16 F.3d 1189, 1192-95 (Fed. Cir. 1994) (en banc). The "corresponding structure" is that "structure in the written description necessary to perform that function [citation omitted]," that is, "'the specification … clearly links or associates that structure to the function recited in the claims.' [Citation omitted]." *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1208 (Fed. Cir 2002). *See In re Bond*, 910 F.2d 831, 833 (Fed. Cir. 1990) (*quoting* 35 U.S.C. § 112 ¶ 6 ("While a "means-plus-function" limitation may appear to include all means capable of achieving the desired function, the statute requires that it be 'construed to cover the corresponding structure, material, or acts described in the specification and *equivalents thereof*.'") (emphasis added)).

The first "means" recited in claim 29 is "means for controlling alternating movement of moveable gripping mechanisms. . . ." Relevant portions of the Specification relating to this limitation include the following:

> [E]ach of the movable gripping mechanisms may be individually controlled by the appropriate hardware or software controls, as depicted by control "C". . . . As shown by arrows "B", the gripping mechanisms 2a, 2b, 2c, 3a, 3b and 3c are moved into and out of contact or engagement with the

[1] "An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C § 112, ¶ 6.

> periphery of the workpiece 1, again, in one implementation, controlled by the control "C". Spec [0019].
>
> FIG. 2 shows a cross sectional view along line 2-2 of Figure 1. This view shows one structure contemplated for moving the gripping mechanisms into and out of engagement with the workpiece 1. The structure includes an air cylinder 10, but may include a bell crank or other systems such as, for example, a rack and pinion gear. Spec. [0036].

Considering the claim language in light of the Specification, we interpret the claimed "means for controlling alternating movement of moveable gripping mechanisms . . ." as including an air cylinder, a bell crank, a rack and pinion gear, and other equivalent structural components. We further interpret this language as requiring any additional components, i.e., hardware or software, necessary to effect control of these components. We note that control of the components may be computerized or manual.

The second "means" recited in claim 29 is "means for accelerating the workpiece. . . ." Relevant portions of the Specification relating to this limitation include the following:

> The workpiece 1, held on the rotating chuck 5 by each of the gripping mechanisms, may be rotated in the direction of arrow "A", controlled by the control "C", in one implementation. Spec. [0019].
>
> Prior to the rinse stage, the rotational speed of the workpiece is increased to about 100 to 250 RPM for about three minutes. This, of course, results in an acceleration of the workpiece. Spec. [0029]
>
> Prior to the drying stage, the rotational speed of the workpiece is increased to about 1000 to 2500 RPM for about three to five minutes. This, of course, results in an acceleration of the workpiece. Spec. [0033]

> [I]t is contemplated by the invention that all movable gripping mechanisms will be used, initially, during the acceleration of the chuck. Spec. [0024] (first occurrence).

Considering the claim language in light of the Specification, we interpret the claimed "means for accelerating the workpiece . . ." as including a chuck and a motor, as well as other equivalent structural components capable of effecting changes in the speed at which the workpiece is rotated. We further interpret this language as requiring any additional components, i.e., hardware or software, necessary to effect control of these components, including causing all gripping mechanisms to grip the workpiece and maintaining them in a gripping position during acceleration of the workpiece. Control of the components may be computerized or manual.

The third "means" recited in claim 29 is "means for alternately moving the plurality of moveable gripping mechanisms . . . after the workpiece has reached a desired speed". Relevant portions of the Specification relating to this limitation include the following:

> Once the rotation of the chuck has reached a desired speed, then the gripping mechanisms may be released, depending on variables such as time of processing, type of processing fluid and the like, as implemented by the control "C". Spec. [0024] (first occurrence).

> Once at the desired rotation speed, the rinse phase will start using, for example, deionized water at about 100 mil./minute for about three minutes. Spec. [0030].

> The movable gripping mechanisms are again alternated in a manner similar to above for about every ten seconds, for the three minutes. Spec. [0031].

We determine that the claimed "means for controlling alternating movement of moveable gripping mechanisms . . . after the workpiece has reached a desired speed" defines the same components noted above in connection with the first means, i.e., an air cylinder, a bell crank, a rack and pinion gear, and other equivalent structural components. We further interpret this language as requiring any additional components, i.e., hardware or software, necessary to determine when the workpiece has reached a desired speed and necessary to effect control of the components to provided alternating movement between gripping and release positions. Control of the components may be computerized or manual.

Having determined the scope of the claims, we now consider the issue of whether Appellant's Rule 131 Declaration is sufficient to establish conception of the claimed invention before the July 21, 2003 effective date of Shimbara. In support of conception, the declarant states:

> Before July 21, 2003, I conceived of a system for processing a workpiece, wherein the system comprises a plurality of moveable gripping mechanisms being moveable between a holding position and a releasable position with respect to a workpiece, a means for controlling alternating movement of moveable gripping mechanisms of the plurality of moveable gripping mechanisms away from and into contact with the workspace during processing to allow processing fluids to freely flow, unimpeded, from a surface of the workpiece at previous locations of the released gripping mechanisms, a means for accelerating the workpiece while the workpiece is gripped with all of the plurality of moveable gripping mechanisms, and a means for alternately moving the plurality of moveable gripping mechanisms between gripping positions and release positions after the workpiece has reached a desired speed, as recited in each of claims 29-40.

Declaration ¶ 3.

The purpose of a Rule 131 showing is to establish, broadly, possession of the invention. A Rule 131 declarant is not required to show possession of the entire invention as later claimed; it is sufficient that he shows possession of enough to make the entire invention obvious to one of ordinary skill in the art. *See In re Spiller*, 500 F.2d 1170, 1176 (CCPA 1974). *Cf. Bosies v. Benedict*, 27 F.3d 539, 543 (Fed. Cir. 1994) (In interferences: "The question of conception is properly directed to whether there was 'formation [] in the mind of the inventor of a definite and permanent idea of the complete and operative invention … [and whether] every limitation of the count [was] known to the inventor at the time of the alleged conception.' *Coleman v. Dines*, 754 F.2d 353, 359, 224 USPQ 857, 862 (Fed. Cir. 1985) (emphasis added)."). At the same, Rule 131 requires that the *declaration* or *affidavit* include a showing of facts of sufficient "character and weight, as to establish reduction to practice prior to the effective date of the reference, or conception of the invention prior to the effective date of the reference coupled with due diligence from prior to said date to a subsequent reduction to practice or to the filing of the application." 37 C.F.R. § 1.131(b).

We are in agreement with the Examiner's determination that Appellant's Rule 131 declaration does not provide the type of evidentiary showing necessary to antedate Shimbara. A showing of conception must be commensurate in scope with the claims. Thus, a Rule 131 declaration should particularly point out how each claim limitation is supported by the evidence. In this case, the declarant has, at best, authenticated the evidence

relied upon to show conception (*see* Declaration ¶¶ 4 & 5), but has made no attempt to correlate the evidence with the limitations of the claims (*see* Declaration ¶¶ 6 & 7). *See Velander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) (noting that the Board has broad discretion as to the weight to give to declarations offered in the course of prosecution). While the declarant states, in general, that he conceived of the various "means" recited in claim 29, he does not identify structure corresponding to each of the claimed means. (*See* Answer 5-6). Appellant's assertions that "means for accelerating . . . are well know [sic] in the prior art" (Answer 6) and that "[t]he hardware/software components, as one of skill in the art would readily recognize, is the control" do not overcome the deficiencies of the Rule 131 Declaration. *Cf. Biomedino, LLC v. Waters Technologies Corp.,* 490 F.3d 946, 953 (Fed. Cir. 2007) ("The inquiry is whether one of skill in the art would understand the specification itself to disclose a structure, not simply whether that person would be capable of implementing a structure. Accordingly, a bare statement that known techniques or methods can be used does not disclose structure.") (citations omitted); *Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc*., 412 F.3d 1291, 1302 (Fed. Cir. 2005) ("In sum, while it is true that the patentee need not disclose details of structures well known in the art, the specification must nonetheless disclose some structure. Stated differently, the testimony of one of ordinary skill in the art cannot supplant the total absence of structure from the specification.") (citation omitted).[2, 3]

[2] As an additional matter, we note that the declarant fails to mention, or otherwise indicate, that he conceived of the specific features recited in dependent claims 30-40 prior to the July 21, 2003 effective date of

Having concluded that Appellant's Rule 131 Declaration is not sufficient to antedate Shimbara, we next address Appellant's contention that, even if Shimbara is prior art under 35 U.S.C. § 102(e), the Examiner has not made a prima facie showing of anticipation because the Examiner has not specifically identified a disclosure of "accelerating the workpiece while the workpiece is gripped with all of the plurality of moveable gripping mechanisms." (Reply 2). The specific issue we address is: Are the Examiner's findings sufficient to establish that Shimbara discloses, either expressly or inherently, "a means for accelerating . . ." as claimed in claim 29? We answer this question in the affirmative.

Shimbara. Likewise, Appellant does not discuss the dependent claims and, as such, appears to misapprehend the burden of proof. Appellant argues that "the Declaration provides all of the necessary disclosure to support the recited features and that the rejection of claim 29 under 35 U.S.C. § 102(e) as being anticipated by . . . [Shimbara] has been rendered invalid." Even if this statement were true, it would not be sufficient to remove the Examiner's rejection of the remaining claims, i.e., claims 30-40 under 35 U.S.C. § 102(e) as anticipated by Shimbara, because Appellant has not established possession of the invention of claims 30-40 prior to the effective date of Shimbara.

[3] The declaration also fails to antedate Shimbara because there is insufficient evidence of "due diligence from prior to said date [of the reference] to a subsequent [actual] reduction to practice or to the filing of the application [constructive reduction to practice]," 37 C.F.R. § 1.131. More specifically, paragraphs 8-11 of the declaration are mere averments of diligence without supporting evidence to establish diligence for the entire period between just prior to July 21, 2003 and the November 24, 2003 filing date of the parent application. To establish due diligence, Appellants must state with particularity and provide evidence of the sequence of events which occurred during this four month time frame. *See generally, In re Nelson*, 420 F.2d 1079 (CCPA 1970).

Contrary to Appellant's contention, we find that the Examiner provided a detailed and thorough comparison of the claim 29 features with the Figure 23 embodiment of Shimbara. The Examiner explicitly identified components of Shimbara's system which structurally correspond to each and every claim feature (both by reference numerals in Figure 23 and by paragraph numbers describing their respective functions). The Examiner specifically references Shimbara paragraph [0327] which provides, in relevant part, that:

> [a]fter the spin chuck 401 is accelerated to a predetermined rotation speed to be rotated at the constant rotation speed . . . the three clamp pins 421-1, 421-3, 421-5 arranged at an angular interval of 120 degrees are synchronously opened and closed, while the other three clamp pins 421-2, 421-4, 421-6 arranged at an angular interval of 120 degrees are synchronously opened and closed. . . . Thus, the wafer clamping positions can be changed, while the wafer W is constantly clamped by either or both of the sets of the clamp pins 421.

The Examiner also references Shimbara paragraph [0332] which explains that

> the control section 450 controls the chuck rotative drive mechanism 413 and the shield plate rotative drive mechanism 404 to accelerate the rotation of the spin chuck 401 and the shield plate 402 so as to rotate the wafer W at a high speed. Thus, a drying process is performed by spinning off water from the surface of the wafer W by a centrifugal force. During the drying process, the wafer W is stably clamped by all the clamp pins 421-1 to 421-6.

In our view, this language clearly describes the structural equivalent of the claim 29 "means for accelerating. . . ." More specifically, we find that Shimbara's spin chuck 401 and chuck rotative drive mechanism 413 are

capable of accelerating the workpiece and are structural equivalents of Appellant's chuck and motor. Likewise, Shimbara's clamp pins 421-1 to 421-6 are structurally equivalent to Appellant's claimed gripping mechanisms. Shimbara states that the wafer is stably clamped by all clamp pins during a drying process in which the wafer is spun, thereby establishing that the spin chuck 401 and chuck rotative drive mechanism 413 are capable of accelerating the workpiece while the workpiece is gripped with all of the clamp pins. Shimbara discloses a control section 450 for controlling these operations, i.e., hardware or software, necessary to effect control of the components. *See, supra,* Shimbara [0327] & [0332].

Accordingly, we conclude that a preponderance of the evidence favors the Examiner's conclusion that Shimbara anticipates appealed claims 29-40.

Rejection of claims 29-40 under 35 U.S.C. § 103(a) as unpatentable over Olgado

The Examiner finds that Olgado discloses the invention as claimed with the exception of a "means or structure which enables alternate gripping and releasing of the gripping mechanisms or fingers 'after' a certain desired speed has been reached." (Answer 4). The Examiner maintains that one of ordinary skill in the art would have appreciated that alternate gripping and releasing of the workpiece could be effected at any desired speed by way of Olgado's controller and motor to enable effective rinsing or cleaning of all surfaces of the workpiece. (Answer 4-5). Appellant concedes that Olgado discloses securing the workpiece with gripping fingers during a spinning operation as well as alternately actuating fingers during first and second cleaning periods. (Br. 8). However, Appellant maintains that Olgado "does

not disclose, or even suggest, accelerating the workpiece while the workpiece is gripped, much less, doing so with all of the plurality of gripping mechanisms." (Br. 8 (emphasis in original)). Based on the contentions of the Examiner and the Appellant, the issue presented is: Has the Examiner established that it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention to have equipped Olgada's system with hardware and/or software which allows gripping a workpiece with all gripping fingers while accelerating the workpiece? We answer this question in the affirmative.

The following Findings of Fact are relevant to our consideration of this issue:

1) Olgado is directed to an apparatus for and method of rinsing and cleaning a wafer/substrate. (Abstract). In one embodiment shown in Fig. 2, Olgado's method includes the steps of grabbing the substrate with a first set of fingers (42), spinning the substrate (43), grabbing the substrate with a second set of fingers (47), releasing the first set of fingers (48) and stopping substrate spinning (50).
2) Olgado discloses positioning the substrate 80 on a chuck 61. (Col. 4, l. 50). Chuck 61 is operatively coupled to a motor that can spin the chuck at speeds up to 5000 revolutions per minute. Once the substrate 80 is secured to the chuck 61 by fingers 72 (step 42), the chuck 61 and substrate 80 are spun to rinse the plating solution from substrate 80 (FIG. 2, step 43). "This initial spinning step may include reversing the spin direction

one or more times to improve the effectiveness of the rinsing step." (Col. 5, ll. 9-18).

3) "The areas of the substrate edge 82 that fingers 72 uses [sic] to secure substrate 80 during the spinning operation are in mechanical contact with fingers 72 and thus may not be adequately exposed to cleaning solution during step 46. Thus, after a first cleaning period, a second set of fingers 73 are actuated to secure substrate 62 (FIG. 2, step 47) and the first set of fingers 72 are released (FIG. 2, step 48)." (Col. 5, ll. 58-64). "During this time chuck 61 and substrate 80 are continuously spun and cleaning solution is continuously dispensed to the backside of the substrate. . . . [F]ingers 72 and 73 can be actuating while chuck 61 is spinning independent of the chuck's rotation." (Col. 6, ll. 3-7).

In *KSR Int'l Co. v. Teleflex Inc*., 127 S. Ct. 1727, 1740-41 (2007), the Supreme Court explained that a showing of obviousness does not require identification of "precise teachings directed to the specific subject matter of the challenged claim." To the contrary, in an obviousness determination, it is appropriate to "take account of the inferences and creative steps that a person of ordinary skill in the art would employ. *Id.*

In the present case, we find that the facts and reasons relied on by the Examiner support a conclusion that it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention to have equipped Olgada's system with hardware and/or software which allows gripping a workpiece with all gripping fingers while accelerating the workpiece. Olgada specifically discloses gripping the substrate with both, i.e., all, sets

of fingers while the substrate is spinning (FF 3). Olgada teaches that the spinning step may include reversing the spin direction one or more times (FF 2), which would inherently involve deceleration and acceleration of the substrate. Therefore, it is reasonable to conclude that one of ordinary skill in the art could readily have modified Olgada's control system such that both sets of gripping fingers held the substrate when changing the direction of spin and accelerating the workpiece to a desired spin speed.

In view of the foregoing, we find that a preponderance of the evidence weighs in favor of obviousness of claims 29-40 in view of Olgada.

ORDER

The decision of the Examiner rejecting claims 29-40 under 35 U.S.C. § 102(e) as anticipated by Shimbara and claims 29-40 under 35 U.S.C. § 103 as unpatentable over Olgado 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)(1)(iv).

AFFIRMED

tf/ls

GREENBLUM & BERNSTEIN, P.L.C.
1950 ROLAND CLARK DRIVE
RESTON, VA 20191