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. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YU-LIANG LIN and CHIH-I PENG

Appeal No. 2004-1231
Application 09/481,224

ON BRIEF

Before JERRY SMITH, FLEMING, and GROSS, **Administrative Patent Judges**.

FLEMING, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-20.

INVENTION

Appellants' invention relates to an apparatus and a method for off-line pre-conditioning a conditioning disc. See Appellants' specification, page 12, lines 8 and 9. Fig. 3 shows

a side view of Appellants' apparatus. The apparatus comprises an upper platform 44, a lower platform 46, a DC motor 48 for rotating the upper platform 44, a DC motor 50 for rotating the lower platform 46, and means 52 for moving the upper platform 44 in a vertically up-and-down position to apply a pressure between the upper platform 44 and the lower platform 46. Appellants' specification, page 18, last paragraph. Once a suitable pressure is applied, a locking device 54 locks the position of the upper platform 44. The upper platform 44 is rotated in a first direction, while the lower platform 46 is rotated in a second direction that is opposite to the first direction. As shown in Figs. 3B and 3C, a diamond disc 30 for pre-conditioning is mounted to a flat disc 56 of the upper platform 44 by two screws 62 inserted into mounting holes 64 provided in the flat disc 56. A shaft 58 connected to DC motor 48 by pulley and belt rotates the flat disc 56 and the conditioning disc 30. See Appellants' specification, page 20. As shown in Fig. 3A, the polishing pad 60 is mounted on the lower platform 46 in order to engage with the conditioning disc 30. See Appellants' specification, page 19, last paragraph.

Appellants' method comprises the steps of mounting the conditioning disc 30 to the upper platform 44, mounting the

polishing pad 60 to the lower platform 46, rotating the conditioning disc 30 on the upper platform 44 in a first direction and rotating the polishing pad 60 on the lower platform 46 in a second direction that is opposite to the first direction, and moving the upper platform 44 toward the lower platform 46 so that a first surface of the conditioning disc 30 is pressed against a second surface of the polishing pad 60 for a pre-set length of time while the conditioning disc 30 and the polishing pad 60 are rotated in opposite directions. See Appellants' specification, page 14, line 4 through page 15, line 3.

Claim 1 is representative of the claimed invention and is reproduced as follows:

1. An apparatus for off-line pre-conditioning a conditioning disc comprising:

an upper platform not situated in a CMP apparatus for mounting a conditioning disc thereto exposing a first surface to be preconditioned and for rotating in a first direction;

a lower platform not situated in a CMP apparatus for mounting a polishing pad thereto exposing a surface for pre-conditioning said conditioning disc and for rotating in a second direction opposite to said first direction;

means for applying a preset pressure between said first surface and said second surface by pressing said two surfaces against each other; and

means for moving vertically at least one of said upper platform and said lower platform toward the other.

REFERENCES

The prior art relied on by Examiner is Appellants' Admitted Prior Art (AAPA).

REJECTIONS AT ISSUE

Claims 1-20 stand rejected under 35 U.S.C. § 112, first paragraph. Claims 1-12 stand rejected under 35 U.S.C. § 112, second paragraph. Claims 1-20 stand rejected further under 35 U.S.C. § 103.

OPINION

With full consideration being given to the subject matter on appeal, Examiner's rejections and the arguments of Appellants and Examiner, for the reasons stated **infra**, we reverse the Examiner's rejection of claims 1-20 under 35 U.S.C. § 112, first paragraph, the rejection of claims 1-12 under 35 U.S.C. § 112, second paragraph, and the rejection of claims 1-20 under 35 U.S.C. § 103(a).

We first turn to the rejection of claims 1-20 under 35 U.S.C. § 112, first paragraph. In rejecting a claim under the first paragraph of 35 U.S.C. §112 for lack of adequate descriptive support, it is incumbent upon the examiner to establish that the originally filed disclosure would not have

reasonably conveyed to one having ordinary skill in the art that an appellant had possession of the now claimed subject matter. ***Wang Laboratories, Inc. v. Toshiba Corp***., 993 F.2d 858, 865, 26 USPQ2d 1767, 1774 (Fed. Cir. 1993). Adequate description under the first paragraph of 35 U.S.C. 112 does not require *literal* support for the claimed invention. ***In re Herschler***, 591 F.2d 693, 701, 200 USPQ 711, 717 (CCPA 1979); ***In re Edwards***, 568 F.2d 1349, 1351-52, 196 USPQ 465, 467 (CCPA 1978; ***In re Wertheim***, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). Rather, it is sufficient if the originally filed disclosure would have conveyed to one having ordinary skill in the art that an appellant had possession of the concept of what is claimed. ***In re Anderson***, 471 F.2d 1237, 1244, 176 USPQ 331, 336 (CCPA 1973).

Claims 1-20 stand rejected under 35 U.S.C. § 112, first paragraph, because the Examiner considers the added recitation "*not situated in a CMP apparatus*" to be new matter. See Answer, page 4, last paragraph. The question before us is whether Appellants had possession of the now claimed subject matter "an upper platform *not situated in a CMP apparatus*" and "a lower platform *not situated in a CMP apparatus*" in claim 1, and similarly "a pre-conditioning apparatus *not situated in a CMP*

apparatus" in claim 13.

A review of the prosecution history shows that Appellants amended claim 1 on June 25, 2001 as follows:

1. (Amended) An apparatus for off-line pre-conditioning a conditioning disc comprising:

an upper platform <u>not situated in a CMP apparatus</u> for mounting a conditioning disc thereto exposing a first surface to be preconditioned and for rotating in a first direction;

a lower platform <u>not situated in a CMP apparatus</u> for mounting a polishing pad thereto exposing a surface for pre-conditioning said conditioning disc and for rotating in a second direction opposite to said first direction;

Similarly, Appellants amended claim 13 on March 5, 2003 as follows:

13. (Amended) A method for off-line preconditioning a conditioning disc comprising the steps of: providing a pre-conditioning apparatus <u>not situated in a CMP apparatus</u> equipped with a rotatable upper platform, a rotatable lower platform, means for applying a pressure between said upper platform and said lower platform and means for moving said upper platform and said lower platform toward each other;

We find that Appellants' specification on page 2 describes the CMP apparatus as a chemical-mechanical polishing apparatus employed in combination with a pneumatically actuated polishing head. Particularly, lines 16-18 on page 2 of the Appellants' specification state "CMP apparatus is used primarily for polishing the front face or device side of a semiconductor wafer during the

fabrication of semiconductor devices on the wafer." Appellants schematically illustrate a typical CMP apparatus in Figs. 1A and 1B. See Appellants' specification, page 3, lines 4 and 5. In addition, Appellants show another prior art CMP head in Fig. 1C. Appellants further explain that the polishing pad in a CMP process is rapidly deteriorated due to an effect known as "pad-glazing." Appellants' specification, page 6, second paragraph. To remedy the pad glazing effect, numerous techniques of pad conditioning or scrubbing have been proposed to regenerate and thereby, restore the pad surface. The pad conditioning process can be carried out either during a polishing process, *i.e.*, known as concurrent conditioning, or after a polishing process. The conventional apparatus of a conditioning disc is frequently not effective in conditioning a pad surface because the diamond particles on the surface of the conditioning disc may become lost, loosen, or flattened. A method for preventing wafer surfaces from being scratched by loose diamond particles that have been dislodged from a conditioning disc is to pre-condition the conditioning disc. Appellants' specification, pages 7 and 8. Traditionally, this is done in a CMP apparatus prior to the start of wafer polishing. However, the pre-conditioning process takes at least 30 minutes of fabrication time away from the CMP apparatus, thus, reduces the

fabrication yield of the machine. Appellants' specification, page 9, line 16 through page 10, line 3. Appellants further state on page 10 of the Appellants' specification:

> It is another object of the present invention to provide an apparatus for carrying out a pre-conditioning process on a conditioning disc in an off-line manner without sacrificing machine time.
>
> It is a further object of the present invention to provide an off-line pre-conditioning a conditioning disc that can be carried out without affecting the fabrication yield of the chemical mechanical polishing apparatus.

Appellants describe the details of Appellants' apparatus and method on pages 18-22 of Appellants' specification as shown in Figs. 3, 3A-3C and 4.

We note that the claimed apparatus shown in Figs. 3, 3A-3C and 4 is different and separate from the CMP apparatus shown in Figs. 1(A)-1(C). In addition, the original disclosure clearly describes that Appellants' apparatus and method is for carrying out a preconditioning process on a conditioning disc in an off-line manner to save the production time of the CMP apparatus of the prior art. In other words, the term "off-line" here is meant to be "off" or "at the outside" of the production line that has the CMP apparatus. Therefore, we find that Appellants had possession of the

claimed subject matter as amended. Accordingly, we will not sustain the Examiner's rejection under 35 U.S.C. § 112, first paragraph.

We now address the rejection of claims 1-12 under 35 U.S.C. § 112, second paragraph, as being indefinite. A fundamental principle contained in 35 U.S.C. 112, second paragraph, is that Appellants are entitled to be their own lexicographers. Appellants may define in the claims what Appellants regard as their invention essentially in whatever terms Appellants choose so long as the terms are not used in ways that are contrary to accepted meanings in the art. Appellants may use functional language, alternative expressions, negative limitations, or any style of expression or format of claim, which makes clear the boundaries of the subject matter for which protection is sought. As noted by the court in ***In re Swinehart***, 439 F.2d 210, 212-13, 160 USPQ 226, 229 (CCPA 1971), a claim may not be rejected solely because of the type of language used to define the subject matter for which patent protection is sought. "The definiteness inquiry focuses on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the rest of the Appellants'

specification." ***BJ Services Co. v. Halliburton Energy Services Inc***., 338 F.3d 1368, 1372, 67 USPQ2d 1692, 1694-1695 (Fed. Cir. 2003) citing ***Union Pac. Res. Co. v. Chesapeake Energy Corp***., 236 F.3d 684, 692, 57 USPQ2d 1293, 1297 (Fed. Cir. 2001) citing ***Orthokinetics, Inc. v. Safety Travel Chairs, Inc***., 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1983).

The Examiner rejects claims 1-12 under 35 U.S.C. 112, second paragraph, as being indefinite since the Examiner does not understand the meaning of the recitation "not situated in a CMP apparatus" and what constitutes the apparatus. See page 4 of the Answer.

We find that the recitation "not situated in a CMP apparatus" means separate from and located outside of the CMP apparatus. Thus, Appellants' claims are setting forth an apparatus that is separate and different from a CMP apparatus. Therefore, we will not sustain the Examiner's rejection under 35 U.S.C. 112, second paragraph.

Finally, we now address the rejection under 35 U.S.C. § 103. In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of establishing a **prima facie** case of obviousness. ***In re Oetiker***, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir.

1992). See also ***In are Piasecki***, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). The Examiner can satisfy this burden by showing that some objective teaching in the prior art or knowledge generally available to one of ordinary skill in the art suggests the claimed subject matter. ***In re Fine***, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Only if this initial burden is met, does the burden of coming forward with evidence or argument shift to Appellants. ***Oetiker***, 977 F.2d at 1445, 24 USPQ2d at 1444. See also ***Piasecki,*** 745 F.2d at 1472, 223 USPQ at 788. An obviousness analysis commences with a review and consideration of all pertinent evidence and arguments. "In reviewing the [E]xaminer's decision on appeal, the Board must necessarily weigh all of the evidence and argument." ***In re Oetiker***, 977 F.2d at 1445, 24 USPQ2d at 1444. "[T]he board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion." ***In re Lee***, 277 F.3d 1338, 1344, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002). With these principles in mind, we now turn to consider the arguments related to claims 1-20.

Appellants argue that the additional limitation added to independent claims 1 and 13 “not situated in a CMP apparatus” is definite under 35 U.S.C. § 112 or being properly supported by the Appellants’ specification under 35 U.S.C. § 112 first paragraph, therefore, the rejection of claims 1-20 under 35 U.S.C. § 103(a) based on Appellants’ Admitted Prior Art is improper. Brief at page 10.

The Examiner argues at page 5 of the Answer:

> AAPA clearly shows preconditioning a diamond disc. Assuming, arguendo, that "off-line" means "not situated in a CMP apparatus", it is determined that the location of the pre-conditioning platform would be an obvious design expedient in order to provide optimal machining and results.

We note that the Examiner has failed to specifically point out which structure(s) of the prior art constitute(s) the pre-conditioning platform. On the other hand, we find that the admitted prior art shows the CMP apparatus for polishing semiconductor wafers, not an apparatus for off-line conditioning a conditioning disc. Appellants’ specification, pages 1-3. Assuming *arguendo* that the admitted prior art teaches the pre-conditioning platform, we fail to find Examiner’s arguments persuasive as to the matter of the prior art leading one of ordinary skill in the art to

make the modification proposed by the Examiner. The Federal Circuit held that the totality of the record must be considered. Even when changes from the prior art are “minor” or “simple,” an inquiry must be made as to whether “the prior art provides any teaching or suggestion to one of ordinary skill in the art to make the changes.“ ***In re Chu***, 66 F.3d 292, 298-99, 36 USPQ2d 1089, 1094-95 (Fed. Cir. 1995). A finding of “obvious design choice” is precluded where the claimed structure and the function it performs are different from the prior art. ***In re Chu***, 66 F.3d at 299, 36 USPQ2d at 1095 (Fed. Cir. 1995) citing ***In re Gal***, 980 F.2d 717, 719, 25 USPQ2d 1076, 1078 (Fed. Cir. 1992). See also ***Monarch Knitting Machinery Corp. v. Sulzer Morat GmbH***, 139 F.3d 877, 45 USPQ2d 1977 (Fed. Cir. 1998).

In this case, the location of the pre-conditioning platform performs the function of preconditioning a conditioning disc, hence, it is different from the function of polishing a wafer of the prior art CMP apparatus. Therefore, we will not sustain the Examiner’s rejection under 35 U.S.C. § 103.

SUMMARY

In view of the foregoing discussion, we have not sustained the rejections of claims 1-20 under 35 U.S.C. § 112, first paragraph, claims 1-12 under 35 U.S.C. § 112, second paragraph, and claims 1-20 under 35 U.S.C. §103(a).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED

JERRY SMITH Administrative Patent Judge	)	
MICHAEL R. FLEMING Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
ANITA PELLMAN GROSS Administrative Patent Judge	)	

MRF: pgc

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