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

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte Jen-Yuan Yang

Appeal No. 2005-0713
Application No. 10/153,718

ON BRIEF

Before PAK, KRATZ and TIMM, *Administrative Patent Judges*.

KRATZ*, Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on appeal from the examiner's refusal to allow claims 1-5, 11, and 12, which are all of the claims pending in this application.

BACKGROUND

The subject matter on appeal is directed to a plasma processing apparatus for processing a microelectronic substrate with enhanced plasma control (specification, paragraph 14). The invention uses a radio frequency powered circuit having a minimum of two adjustment capacitors interposed between a decoupling capacitor and a radio frequency powered electrode (specification, paragraph 15).

As a preliminary matter, we note appellant's statement on p. 5 of the brief that the claims do not stand or fall together. However, only claim 11 is argued separately with respect to the examiner's first and third stated rejection. Therefore, for purposes of this appeal, we select claim 1 as representative of claims 1-3, 5, and 12 grouped on appeal as in the examiner's first and third stated rejection and we decide the propriety of the examiner's rejections of those claims based on representative claim 1 pursuant to 37 CFR § 1.192(c)(7). Claim 4 separately rejected. Thus, claim 4 is separately considered. An understanding of the invention can be derived from a reading of exemplary claims 1, 4, and 11 which are reproduced below.

> 1. A plasma processing apparatus comprising:
> a reactor chamber,

a radio frequency powered electrode contained within the reactor chamber;

a radio frequency power circuit powering the radio frequency powered electrode, wherein the radio frequency power circuit comprises:

a radio frequency power source separated from the radio frequency powered electrode by a decoupling capacitor in series; and

a minimum of two adjustment capacitors interposed between the decoupling capacitor and the radio frequency powered electrode, one terminal of each of the adjustment capacitors being electrically connected with one terminal of the decoupling capacitor and the other terminal of each of the adjustment capacitors being connected to ground.

4. The apparatus of claim 3 wherein the plasma etching apparatus comprises a plasma reactant gas ring assembled to the radio frequency powered electrode.

11. The apparatus of claim 1 wherein the decoupling capacitor is a single decoupling capacitor.

REFERENCES

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Nakano	6,270,618	Aug. 7, 2001
Singh	6,042,687	Mar. 28, 2000
Nguyen	5,244,730	Sep. 14, 1993
Gesche	5,140,223	Aug. 18, 1992

REJECTIONS

The appealed claims stand rejected as follows:

(1) Claims 1-3, 5, and 11-12 are rejected under 35 U.S.C. § 102(b) as being anticipated by Gesche.

(2) Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Gesche in view of Singh.

(3) Claims 1-3, 5, and 11-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakano in view of Nguyen.

(4) Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakano and Nguyen in view of Singh.

OPINION

We have carefully reviewed the claims, specification and applied prior art, including all of the arguments and evidence advanced by the appellant and the examiner in the brief and the answer in support of their respective positions. This review has led us to conclude that the examiner’s rejections (1) and (2) are well founded. Accordingly, we affirm the examiner’s rejections (1) and (2) for the reasons set forth in the answer and below, however we reverse the examiner’s rejections (3) and (4).

I. § 102(b) rejection of claims 1-3, 5, and 11-12 over Gesche.

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). The law of anticipation only that the claims on appeal "read on" something disclosed in the reference (see Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984)).

With respect to claim 1, we refer to page 4 of the answer regarding the examiner’s position in this rejection. As found by the examiner (answer, page 4), Gesche teaches in Figure 1 a high frequency generator (1), which corresponds to the claimed radio frequency power source, separated from the radio frequency powered electrode (7) by a capacitor (14), which corresponds to the claimed decoupling capacitor, and two variable capacitors (9, 13),

which correspond to the claimed adjustment capacitors, interposed between the high frequency generator (1) and the radio frequency powered electrode (7), one terminal of each of the adjustment capacitors (9, 13) being electrically connected with one terminal of the capacitor (14).

The appellant argues (brief, page 6) Gesche does not teach “a minimum of two adjustment capacitors . . . [where] one terminal of each of the adjustment capacitors [is] electrically connected with one terminal of the decoupling capacitor” as required by claim 1. Appellant argues that in Figure 1 of Gesche, the adjustment capacitor (9) cannot be electrically connected to the decoupling capacitor (14) because the decoupling capacitor (11) effectively decouples the adjustment capacitor (9). We disagree.

In the instant case, Gesche clearly teaches in Figure 1 that the adjustment capacitors (9, 13) are electrically connected to the decoupling capacitor (14). Merely because Gesche teaches (col. 2, ll. 45-68) a second decoupling capacitor (11) is interposed between the first decoupling capacitor (14) and the adjustment capacitor (9) does not negate the fact that the first decoupling capacitor (14) is capable of being electrically connected to variable capacitors (9).

Appellant argues (brief, page 7) since Gesche does not designate whether capacitor (14), (11), or (8) is the decoupling capacitor, it is plausible that Gesche might have intended either of Gesche's capacitors (11) or (8) as a decoupling capacitor. Therefore, appellant argues, Gesche does not meet the claim 1 limitation requiring "a minimum of two adjustment capacitors . . . [where] one terminal of each of the adjustment capacitors being electrically connected with one terminal of the decoupling capacitor" if capacitors (11) or (8) are considered as the decoupling capacitor. We disagree with that argument. As stated supra, Gesche clearly teaches in Figure 1 that the adjustment capacitors (9, 13) are electrically connected to the decoupling capacitor (14).[1] Moreover, claim 1 uses open "comprising" language and does not exclude additional capacitors (11) and/or (8) of Gesche.

With respect to claim 11, appellant argues (brief, page 8) that Gesche does not teach the claim limitation "wherein the decoupling capacitor is a single decoupling capacitor." While we

[1] We note that each of capacitors (14), (11) and (8) of Gesche are fixed capacitors located in series with the RF power source and electrode. thus, those capacitors of Gesche represent decoupling capacitors as claimed by appellant. See brief, page 6, item (d) for appellant's definition of a decoupling capacitor. Appellant has not offered any evidence or persuasive argument to dispute the examiner's finding that capacitor (14) of Gesche represents a decoupling capacitor as claimed.

agree with the appellant that Gesche teaches three decoupling capacitors (Figure 1, items 8, 11, and 14 and col. 3, ll. 1-15), we disagree with the appellant in that Gesche does teach the claimed limitation. Claim 1 requires "a minimum of two adjustment capacitors interposed between the decoupling capacitor and the radio frequency powered electrode." While Gesche teaches in Figure 1 three decoupling capacitors (8, 11, and 14), only one decoupling capacitor (14) is positioned so that a minimum of two adjustment capacitors (13 and 19) are interposed between the decoupling capacitor (14) and radio frequency powered electrode (7).

II. § 103(a) rejection of claim 4 over Gesche in view of Singh.

With respect to claim 4, appellant does not dispute the examiner's finding (brief, page 6) of obviousness over Gesche in view of Singh other than arguing that Gesche does not teach the claim 1 limitation "a minimum of two adjustment capacitors . . . [where] one terminal of each of the adjustment capacitors being electrically connected with one terminal of the decoupling capacitor." For the reasons stated supra, we affirm.

III. § 103(a) rejection of claims 1-3, 5, and 11-12 over Nakano in view of Nguyen and the 35 U.S.C. § 103(a) rejection of claim 4 over Nakano and Nguyen in view of Singh.

The examiner has found (answer, page 6) that Nakano teaches all of the representative claim 1 elements except the matching network having the claimed "decoupling capacitor." To remedy this deficiency, the examiner relies on Nguyen to teach a matching network that includes a decoupling capacitor and concludes that it would have been obvious to modify Nakano to use a decoupling capacitor in order to minimize the reflected power. Id. 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 re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). In order to satisfy this burden, the examiner must show 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). Appellant argues (brief, pp. 10 and 11) that the examiner has not established the requisite motivation to combine Nakano with

Nguyen. The examiner rebuts (answer, page 9) this argument by asserting that the motivation is “to minimize reflected power.” We find appellant’s argument persuasive.

Nakano teaches (col. 2, ll. 20-30 and col. 4, ll. 3-10) a novel way to clean a reaction chamber in order to avoid switching out the band eliminator by varying the variable capacitor so that the impedance reaches a local maximum value. Implicit in this teaching is the desire to enhance the reflected power, as argued by appellant at page 11 of the brief. Absent some evidence of a motivation to minimize the reflected power by incorporating a decoupling capacitor in the plasma processing apparatus of Nakano, we cannot agree that a prima facie case of obviousness has been established. In this regard, the examiner bears the burden of explaining why minimizing reflected power would be advantageous in the system of Nagano. Merely asserting that Nguyen employs a blocking capacitor to minimize reflected power in the system of Nguyen does not explain why such a result would be desirable in the apparatus of Nakano, wherein a cleaning function at a maximum impedance value would be desired. Accordingly we reverse this rejection.

CONCLUSION

The decision of the examiner to reject claims 1-3, 5, and 11-12 under 35 U.S.C. § 102(b) as being anticipated by Gesche and to reject claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Gesche in view of Singh is affirmed. The decision of the examiner to reject claims 1-3, 5, and 11-12 under 35 U.S.C. § 103(a) as being unpatentable over Nakano in view of Nguyen and to reject claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Nakano and Nguyen in view of Singh is reversed.

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

AFFIRMED

CHUNG K. PAK Administrative Patent Judge	)
PETER F. KRATZ Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
CATHERIN TIMM Administrative Patent Judge	)

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