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Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SUSAN G. TELFORD
and CRAIG BERCAW

Appeal No. 1996-0200
Application 08/119,444

ON BRIEF

Before DOWNEY, WILLIAM F. SMITH and PAK, Administrative Patent Judges,

Downey, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 1-48, all the claims remaining in the application.

The subject matter on appeal relates to an aluminum susceptor useful in the vacuum chamber of a reactor in the production of integrated circuit structures and its method of

production. The susceptor comprises an aluminum alloy base having a roughened surface and an anodized coating on the surface of the aluminum and is made by roughening the aluminum alloy base and anodizing the susceptor in an electrolyte comprising an organic acid. Claims 1, 22 and 31 are illustrative of the invention and read as follows:

1. A method of making an improved high temperature-resistant anodized aluminum susceptor used in apparatus for treatment of materials used in semiconductor devices comprising the steps of:

(a) fabricating an aluminum susceptor comprising an aluminum alloy; and

(b) anodizing said susceptor in an electrolyte comprising an organic acid to provide said high temperature resistant anodized coating on said susceptor.

22. An improved aluminum susceptor resistant to high temperature without substantial cracking and used in apparatus for treatment of materials used in semiconductor devices, the susceptor comprising: a base comprised of an aluminum alloy containing not more than 0.05 wt.% magnesium; a roughened surface; and an anodic coating comprised of an organic acid anodic coating on said surface.

31. An improved aluminum susceptor resistant to high temperature and cracking and used in apparatus for treatment of materials used in semiconductor devices, the susceptor comprised of:

(a) an aluminum alloy having a surface roughness; and

(b) an anodic coating formed on said aluminum susceptor by anodizing said aluminum susceptor in an organic acid electrolyte and resistant to cracking and peeling at high temperatures.

The references relied upon by the examiner are:

Chen et al. (Chen)	4,481,084	Nov. 6, 1984
Quartarone	5,104,514	Apr. 14, 1992
Arai et al. (Arai)	5,203,958	Apr. 20, 1993
Ball et al. (Ball)	5,220,140	Jun. 15, 1993

Dr. E. Lichtenberger-Bajza (Bajza), "Rapid Anodizing of Aluminium in Mixed Oxalic-Formic Acid Baths," 342-348 (October 1962).

The rejections before us are:

1. Claims 1-21 and 32-44 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as unpatentable over Chen.
2. Claim 4 stands rejected under 35 U.S.C. § 103 as unpatentable over Chen as in 1. and further in view of Quartarone.
3. Claims 3 and 7-10 stand rejected under 35 U.S.C. § 103 as unpatentable over Chen as in 1. and further in view of Bajza.
4. Claims 14-20 and 32-42 stand rejected under 35 U.S.C. § 103 as unpatentable over Chen and Bajza.
5. Claims 22-31 and 45-48 stand rejected under 35 U.S.C. § 103 as unpatentable over the combination of Ball and Chen,.
6. Claims 23-28 stand rejected under 35 U.S.C. § 103 as unpatentable over Ball and Chen as in 5. further in view of Bajza.
7. Claims 22-31 and 45-48 are rejected under 35 U.S.C. § 103 as unpatentable over the combination of Arai and Chen.
8. Claim 23-28 stand rejected under 35 U.S.C. § 103 as unpatentable over Arai and Chen as in 7. further in view of Bajza.

After careful consideration of the rejections before us, the above cited prior art, the arguments presented by appellants and the examiner, we reverse the above rejections.

I.

The decisional process begins with an analysis of a key legal question --*what* is the invention *claimed*? Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). “Claim interpretation, in light of the specification, claim language, other claims, and prosecution history, is a matter of law and normally will control the remainder of the decisional process” (footnote omitted) *Id.* And thus, claim interpretation is a threshold inquiry. In In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983) the court held:

It is axiomatic that, in proceeding before the PTO, claims in an application are to be given their broadest reasonable interpretation consistent with the specification. In re Prater, 415 F.2d 1393, 1404, 162 USPQ 541, 550 (CCPA 1969), and that claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art. In re Johnson, 558 F.2d 1008, 1016, 194 USPQ 187, 194 (CCPA 1977) [emphasis added].

It is entirely proper to use the specification to interpret what an applicant meant by a word or phrase in the claim. E.I. Du Pont de Nemours & Co. v. Phillips Petroleum Co., 849 F.2d 1430, 1433, 7 USPQ2d 1129, 1131 (Fed. Cir.), cert. denied, 488 U.S. 986 (1988).

The PTO applies to the verbiage of the proposed claims the broadest reasonable

meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in that, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification. [emphasis added] In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997).

During prosecution of the application, the examiner gave the term "susceptor" no weight alleging that the term "does not specifically give 'life and breath' to the claim to distinguish one aluminum substrate from another." Answer, page 19. On the other hand, appellants urge that the term "susceptor" has a specific meaning as defined in their specification. We agree with the appellants.

In our view, the term "susceptor" contributes to the definition of the claimed invention. Bell Communications Research, Inc. v. Vitalink Communications, 55 F.3d 615, 620, 34 USPQ2d 1816, 1820 (Fed. Cir. 1995).

Appellants state:

In the formation of integrated circuit structures, certain processes such as plasma-assisted chemical vapor deposition processes are carried out in a vacuum chamber of a reactor wherein the wafer is mounted on a platform referred to as a susceptor which usually serves not only as a support for the wafer, but also as one of the electrodes for generation of the plasma. Specification page 1.

Having read the term 'susceptor' in light of applicants' specification as it would be interpreted by one of ordinary skill in the art, the broadest reasonable interpretation consistent with the specification would be that a "susceptor" is an element that serves as a platform as well as an electrode for generation of plasma in a vacuum chamber of a reactor used in plasma-assisted chemical vapor deposition processes. With this interpretation, we turn to the outstanding rejections.

II.

Claims 1-21 and 32-44 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as unpatentable over Chen. We reverse.

Claim 1 is directed a process of making an improved high temperature-resistant anodized aluminum susceptor used in an apparatus for the treatment of materials, e.g., wafers, used in semiconductor devices. The process comprises the steps of fabricating and aluminum susceptor comprising an aluminum alloy; and anodizing said susceptor in an electrolyte comprising an organic acid to provide said high temperature resistant anodized coating on said susceptor.

Anticipation within 35 U.S.C. § 102 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. 1984). Note also W.L.Gore & Assoc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984); and Kalman v. Kimberly Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

The PTO has the burden, via the examiner, to establish anticipation. See In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990).

Chen is directed to a process of increasing the crystalline oxide content, and thus the capacitance of a barrier oxide layer of an aluminum electrolytic capacitor foil. The process involves treating an etched aluminum foil in an aqueous electrolyte consisting essentially of an unsubstituted aliphatic dicarboxylic acid to form a barrier layer oxide on the foil, and thereafter stabilizing the barrier oxide layer by employing at least one relaxation and reanodization step.

In our view the examiner has not sustained her burden in that she gave no weight to the term "susceptor" as it would have been interpreted by one of skill in the art. While the Chen process involves the formation an anodized layer on an aluminum substrate, the substrate is, in fact, a foil which is used in the formation of a capacitor. The foil capacitor

of Chen cannot serve as a platform and an electrode for the generation of plasma in a vacuum chamber in the formation . And the examiner has not established under the principles of inherency that Chen's process of anodizing a capacitor foil inherently produces a high temperature-resistant anodized aluminum "susceptor" useful as a platform and an electrode in plasma-assisted chemical vapor deposition processes.

An additional comment is necessary. Appellants have argued that the Chen reference is non-analogous art with respect to the 35 U.S.C. § 102 rejection. We point out that this argument is not germane to a § 102 rejection. In re Self, 671 F.2d 1344, 1351, 213 USPQ 1, 7 (CCPA 1982).

The PTO also has the burden, via the examiner, to establish a prima facie case of obviousness. In re Lowry, 32 F.3d 1579, 1584, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994); In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

A proper analysis under §103 requires, inter alia, consideration of two factors:
(1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable expectation of success. In re Vaeck, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

With respect to 35 U.S.C. § 103 rejection, the examiner after giving no weight to the term “susceptor” has also urged that the method claims “must rely upon the overall method steps for patentability not on the specific starting materials used of products produced” citing the decision of In re Durden, 763 F.2d 1406, 1409, 226 USPQ 359, 360-61 (Fed. Cir. 1985). The examiner’s reliance on the Durden decision is misplaced.

Most recently, our reviewing court has stated that an examiner errs “by resting his *prima facie* case of obviousness on the purportedly controlling nature of our decision in *Durden* rather than on particularized findings, required by *Graham* [v. John Deere, 148 USPQ 459 (1966)], regarding a set of one or more references that would make the claimed process obvious”. In re Brouwer, 77 F.3d 422, 425-26, 37 USPQ 1663, 1666 (Fed. Cir. 1996). See also In re Ochai, 71 F.3d 1565, 1570, 37 USPQ 1127, 1132 (Fed. Cir. 1995) (“mere citation of [in re]Durden, [In re]Alberson, or any other case as a basis for rejecting process claims that differ from the prior art by their use of different starting materials is improper, as it sidesteps the fact-intensive inquiry mandated by section 103”). Accordingly, the 35 U.S.C. § 103 rejection over Chen is also reversed.

III.

Claim 4 stands rejected under 35 U.S.C. § 103 as unpatentable over Chen as in 1. and further in view of Quartarone. Claims 3 and 7-10 stand rejected under 35 U.S.C. § 103 as unpatentable over Chen as in 1. and further in view of Bajza. Claims 14-20 and 32-42 stand rejected under 35 U.S.C. § 103 as unpatentable over Chen and Bajza. We find that Quartarone and Bajza fail to overcome the deficiencies of Chen, accordingly, we reverse these rejections as they are premised upon Chen for the reasons stated in II, supra.

IV.

Claims 22-31 and 45-48 stand rejected under 35 U.S.C. § 103 as unpatentable over the combination of Ball and Chen.

Claim 22 and 31 are directed to an aluminum susceptor element used in an apparatus for the treatment of materials used in semiconductor devices, e.g. wafers. The claim 31 specifically recites an improved aluminum susceptor resistant to high temperature and cracking comprising an aluminum alloy having a rough surface and an anodic coating formed on said aluminum susceptor by anodizing said aluminum susceptor in an organic acid electrolyte and resistant to cracking and peeling at high temperatures.

We reverse this rejection. To properly combine references A and B to reach a conclusion that the subject matter of an application would have been obvious, case law requires that there must have been some teaching, suggestion, or inference in either A or B, or both, or knowledge generally available to one of ordinary skill in the relevant art to combine the relevant teachings of references A and B. Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 304, 227 USPQ 657, 673 (Fed. Cir. 1985).

Ball is directed to the formation of a susceptor for browning or crisping food in a microwave oven. As noted supra, Chen is directed to a process of increasing the capacitance of a barrier oxide layer in an aluminum capacitor foil. The examiner has pointed to no teaching, suggestion, or inference in either reference or knowledge generally available to one of ordinary skill in the relevant art to combine the teachings of Ball and Chen as proposed by the examiner to arrive at the claimed “susceptor” as properly interpreted (see I, supra).

V.

Claims 23-28 stand rejected under 35 U.S.C. § 103 as unpatentable over Ball and Chen as in 5. further in view of Bajza. Bajza does not overcome the deficiencies of Ball or Chen, accordingly, we reverse this rejection for the reasons given in IV.

VI.

Claims 22-31 and 45-48 are rejected under 35 U.S.C. § 103 as unpatentable over the combination of Arai and Chen. We reverse this rejection because the examiner has failed to point to any suggestion, or teaching, or general knowledge in the prior art, that would motivate one of ordinary skill in the relevant art to combine the relevant teachings of A and B. Ashland, 776 F.2d at 304, 227 USPQ at 673.

See IV, for a description of claim 31.

In the background of their invention, appellants indicate that it was known to form anodized coatings on aluminum susceptors using conventional sulfuric acid anodizing techniques. However, this conventional aluminum susceptor is said to experience cracking of the anodized film at high temperatures. (Page 2, lines 15-23). Appellants indicate that their claimed susceptor using both a roughened surface and an organic acid electrolyte to form the anodic coating is resistant to peeling or cracking at high temperatures.

Like appellants, Arai discloses a susceptor used in a vacuum chamber of a reactor for the treatment of materials used in semiconductor devices. Arai describes his susceptor as comprising an aluminum substrate with an anodic aluminum coating thereof and an electrically insulating coating on the aluminum oxide coating. Arai differs from the instant element in that Arai does not describe the surface of the aluminum substrate and how the anodic coating is formed. In view of the background of appellants' invention, we must presume that the Arai uses the prior art technique in the formation of the anodic coating.

To modify Arai, the examiner has relied upon Chen. Chen as described in II, supra is directed to an aluminum foil capacitor containing an anodized aluminum coating. However, we find that the examiner has failed to point to any suggestion, teaching or general knowledge in the relevant art that would have motivated one of ordinary skill in the art to combine the diverse teachings of Arai and Chen.

VII.

Claim 23-28 stand rejected under 35 U.S.C. § 103 as unpatentable over Arai and Chen as in 7. further in view of Bajza.

For a discussion of the rejection of the instant element claims over Arai in view of Chen , see VI.

It is the examiner's position that the only difference between the teachings of Arai and Chen is that the specific purity of the aluminum is not disclosed (page 12 of the answer). To obviate this deficiency, the examiner relies upon Bajza. It is the examiner's position that one of ordinary skill in the art at the time the invention was made to substitute the aluminum substrates of Bajza for those in Arai with the expectation that the use of the purer aluminum substrate would result in a thicker anodic coating. However, as noted supra, there are additional differences between the teachings of Arai and those claimed, differences which are not overcome by Chen and are not overcome by the use of a purer aluminum substrate of Bajza. Accordingly, we will not sustain the examiner's rejection

Reversed

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