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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* JON MCCHESENEY, THEO PANAGOPOULOS,  
ALEX PATERSON, and CRAIG BLAIR

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Appeal 2015-004227  
Application 13/421,188  
Technology Center 1700

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Before TERRY J. OWENS, JAMES C. HOUSEL, and  
MONTÉ T. SQUIRE, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1 and 3–12. We have jurisdiction under 35 U.S.C. § 6(b).

*The Invention*

The Appellants claim a plasma chamber filler kit and a plasma chamber comprising the kit. Claim 1 is illustrative:

1. A chamber filler kit comprising at least one chamber filler configured to be replaceably mounted in an inductively coupled plasma chamber having a vacuum outlet in a bottom wall and a cantilever chuck supported on a sidewall of the chamber, the at least one chamber filler is configured to provide a preselected lower chamber volume and conductance enabling

a particular process to be carried out in the plasma chamber, the at least one chamber filler including a horizontally extending side opening which fits around a horizontal arm of the cantilever chuck and an inner frustoconical surface which is separated from an outer surface of the chuck by a clearance gap; wherein the at least one chamber filler has an outer wall configured to fit against a wall of the chamber; wherein the at least one chamber filler includes:

a top filler having an outer wall configured to fit against the sidewall of the chamber, a frustoconical inner wall, the side opening extending from the inner wall to the outer wall, a horizontally planar upper end, and a horizontally planar lower end;

a mid filler having an outer wall configured to fit against the sidewall of the chamber, an inner wall comprising a horizontally planar annular section extending between an upper concave section and a lower convex section, a horizontally planar upper end and a horizontally planar lower end, the upper end of the mid filler having the same cross section as the lower end of the top filler such that the inner surface of the mid filler mates with the inner surface of the top filler and the outer wall of the mid filler mates with the outer wall of the top filler;

a bottom filler having an outer wall configured to fit against a bottom wall of the chamber, a cylindrical inner wall, a horizontally planar upper end and a horizontally planar lower end, the upper end of the bottom filler having the same cross section as the lower end of the mid filler such that the inner wall of the bottom filler mates with the inner wall of the mid filler and the outer wall of the bottom filler mates with the outer wall of the mid filler.

*The References*

Rinnovatore	US 5,188,672	Feb. 23, 1993
Kennedy	US 6,408,786 B1	June 25, 2002
Yen	US 6,527,911 B1	Mar. 4, 2003
Carpenter	US 7,234,412 B2	June 26, 2007

*The Rejections*

The claims stand rejected under 35 U.S.C. § 103 as follows: claims 1, 3, 5–7, 9, and 10 over Yen in view of Carpenter, claims 4 and 8 over Yen in view of Carpenter and Rinnovatore and claims 11 and 12 over Kennedy in view of Yen and Carpenter.

OPINION

We reverse the rejections. We need address only claim 1, the limitations of which are required by all of the other claims. That claim requires a plasma chamber filler kit including a top filler which comprises an outer wall and a frustoconical inner wall and has a side opening extending horizontally from the frustoconical inner wall to the outer wall and fitting around a cantilever chuck's horizontal arm, and a mid filler having an inner wall comprising a horizontally planar annular section extending between an upper concave section and a lower convex section.

Yen discloses a plasma etch chamber (200) comprising a chamber liner (166) which lines the lower region of the chamber (200) from an outer plasma confinement structure (162) to the chamber 200's base and exhaust turbopump (202) and has a vertical portion which appears to fit around a cantilever chuck/electrode structure (144)'s horizontal arm (col. 8, l. 65 – col. 9, l. 5; col. 9, ll. 19–20, 28–32; Figs. 4–5).

Carpenter teaches that deposition chamber liners can be displaced from the internal chamber wall, “thereby defining an appreciably reduced volume chamber within which the substrate is received for deposition” (col. 1, ll. 48–50). Carpenter discloses a deposition chamber (18) comprising a liner apparatus (30) made of pieces (31–38) which are removable by use of an arm (40) (col. 4, ll. 21–29; col. 5, ll. 41–43; Figs. 2,

4–6). “[T]he liner profile or shape may be formed in any configuration, for example to optimize gas flow characteristics to the substrate” (col. 4, ll. 59–61).

The Examiner finds that Yen’s Figure 4 shows that the chamber liner (166) comprises a frustoconical lower region (Ans. 19–20) and “a horizontally extending side opening which fits around a horizontal arm of the cantilever chuck, the side opening extending from the inner wall to the outer wall of the top filler [i.e., the top portion of the chamber liner (166)]” (Ans. 21).

The Appellants’ claim 1 requires that the side opening which fits around the cantilever chuck’s horizontal arm extends from a frustoconical inner wall to an outer wall. The inner wall of the portion of Yen’s chamber liner (166) which fits around the chuck/electrode structure (144)’s horizontal arm is vertical, not frustoconical (Fig. 4).

The Examiner finds that Yen’s chamber liner (166)’s transition from concave to convex necessarily includes a horizontally planar annular section (Ans. 18–19).

The Appellants challenge that finding (App. Br. 18; Reply Br. 3–5). Consequently, we do not accept it as fact. *See In re Kunzmann*, 326 F.2d 424, 425 n.3 (CCPA 1964). An inherent characteristic must be inevitable, and not merely a possibility or probability. *See In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981). The Examiner does not establish that Yen’s chamber liner (166)’s transition from concave to convex inevitably includes a horizontally planar section.

Thus, the Examiner has not set forth a factual basis which is sufficient to support a prima facie case of obviousness of the Appellants’ claimed

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invention. *See In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967) (“A rejection based on section 103 clearly must rest on a factual basis, and these facts must be interpreted without hindsight reconstruction of the invention from the prior art”). Accordingly, we reverse the rejections.

DECISION/ORDER

The rejections under 35 U.S.C. § 103 of claims 1, 3, 5–7, 9, and 10 over Yen in view of Carpenter, claims 4 and 8 over Yen in view of Carpenter and Rinnovatore and claims 11 and 12 over Kennedy in view of Yen and Carpenter are reversed.

It is ordered that the Examiner’s decision is reversed.

REVERSED