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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte XIAOBO ZHANG, VINCENT A. LIM,
HOON H. LEE, JOHN P. SERRA, UMING T. JENG,
STEVEN M. BUNYAN, JULIE J. HOSKIN,
KENT E. BARBOUR, and DIMITRI D. KRUT

Appeal 2015-005153
Application 13/423,231
Technology Center 1700

Before TERRY J. OWENS, ROMULO H. DELMENDO, and
DEBRA L. DENNETT, *Administrative Patent Judges*.

DENNETT, *Administrative Patent Judge*.

DECISION ON APPEAL¹

STATEMENT OF THE CASE

Appellants² appeal under 35 U.S.C. § 134 from a Final Rejection of claims 1–6, 8, 22, and 23. We have jurisdiction under 35 U.S.C. § 6(b).

¹ In our Opinion below, we refer to the Final Action mailed July 1, 2014 (“Final Act.”), the Appeal Brief filed November 24, 2014 (“App. Br.”), the Examiner’s Answer mailed February 10, 2015 (“Ans.”), and the Reply Brief filed April 6, 2015 (“Reply Br.”).

² Appellants identify The Boeing Company as the real party in interest. App. Br. 3.

We affirm.

The claims are directed to a solar cell assembly. Claim 1, reproduced below with the disputed limitation emphasized, is illustrative of the claimed subject matter:

1. A solar cell assembly comprising:

a semiconductor wafer having an upper portion and comprising a solar cell portion and a wing portion, wherein said wing portion is electrically isolated from said solar cell portion; and

an electrical contact material positioned on said upper portion of said solar cell portion,

wherein *said upper portion of said wing portion is substantially free of said electrical contact material.*

App. Br. 12 (Claims App'x).

REFERENCES

Takehara	US 5,318,638	June 7, 1994
Varghese et al. ("Varghese")	US 2010/0012175 A1	Jan. 21, 2010
Cornfeld et al. ("Cornfeld")	US 2010/0233839 A1	Sept. 16, 2010

REJECTIONS

The claims stand rejected as unpatentable as follows: claims 1, 3–6, and 8³ under 35 U.S.C. § 102(b) as anticipated by Cornfeld; claim 2 under 35 U.S.C. § 102(b) as anticipated by Cornfeld as evidenced by Varghese;

³ The Final Action states that claim 21 is rejected as anticipated by Cornfeld. Final Act. 2. However, the Appeal Brief indicates that claim 21 was previously cancelled. App. Br. 3.

a surrounding mesa 516 and a periphery mesa 517 at the edge of the wafer. Cornfeld ¶ 124.

The Examiner identifies the mesa structure that constitutes the solar cell (518) as corresponding to the claimed “solar cell portion,” and the periphery mesa (517) as corresponding to the “wing portion” claimed. Final Act. 3. The Examiner interprets grid lines (501) as corresponding to the claimed “electrical contact material.” *Id.*

Appellants contend that Figure 12A of Cornfeld’s solar cells includes a “mesa structure” (518) which constitutes the solar cell portion. App. Br. 6 (citing Cornfeld ¶ 124). According to Appellants, isolation channels (510 and 511) define a peripheral boundary between the solar cell portion (518), a surrounding mesa portion (516), and a periphery mesa (517). *Id.* at 6–7.

With respect to Cornfeld, we agree with Appellants that the combined surrounding mesa portion (516) and periphery mesa (517) correspond to the claimed wing portion. *See* App. Br. 6–7.

We turn to determining whether the wing portion of Cornfeld is substantially free of electrical contact material.

Appellants argue that the Examiner misconstrues the claim term “electrical contact material” as “grid lines.” *Id.* at 8. Appellants contend that the Specification distinguishes between “electrical contact material” and “grid lines.” *Id.* at 9 (citing Spec. ¶ 29).

During prosecution, claims are given their broadest reasonable scope consistent with the specification as would have been interpreted by one of ordinary skill in the art at the time of the invention. *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). The Specification identifies electrical contact material 22 as being applied to the upper surface

of the semiconductor wafer, and states that it may form an electrically conductive grid 24. Figure 1B of the application is reproduced below:

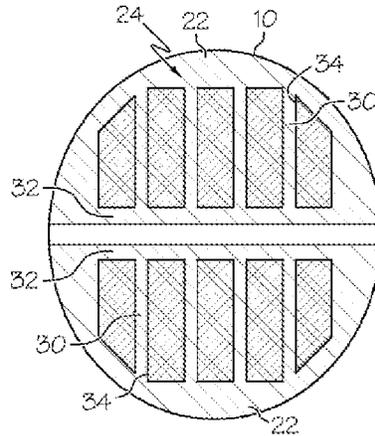


Figure 1B, reproduced above, is a schematic top plan view of a semiconductor wafer during manufacture, shown with an electrical contact material (22) applied thereto. Spec. ¶ 11.

We are persuaded that “electrical contact material” is more extensive than merely being limited to grid lines. As Appellants’ Figure 1B illustrates, electrical contact material, as taught in the Specification, can cover parts of the semiconductor wafer in addition to forming grid lines.

However, with respect to the issue of whether the Examiner properly identifies grid lines in Cornfeld as the claimed “electrical contact material,” Appellants’ argument for construction of the term is irrelevant to application of the term to Cornfeld because Appellants themselves identify the claimed “electrical contact material” as element (501) multiple times. App. Br. 7 (“Fig. 19C of Cornfeld . . . ha[s] an upper portion that includes electrical contact material (layer 501)”; “the mesa shown in Fig. 20B . . . also includes electrical contact material (layer 501)”; Reply Br. 2 (“Because Figs. 19C and 20B . . . clearly show the surrounding mesa 516 (mislabeled as 517 in Fig.

19C) including electrical contact material 501”). Cornfeld refers to layer 501 as “grid lines.” Cornfeld ¶ 135. Appellants identify no other structure in Cornfeld as the claimed “electrical contact material.” *See generally* App. Br.

Appellants point to Figures 19C and 20B of Cornfeld as supporting that the reference teaches electrical contact material on the surrounding mesa (516) (which Appellants and the Examiner agree is mislabeled in Figure 19C as 517). App. Br. 7. Appellants argue earlier in the Appeal Brief that element (501) corresponds to electrical contact material (*see, e.g., id.* at 7), and element (501) is part of surrounding mesa (516). Figure 19C of Cornfeld is reproduced below:

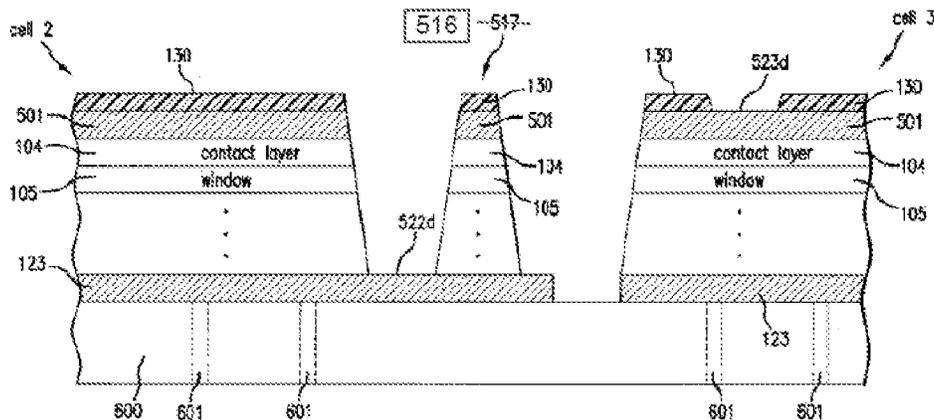


Figure 19C, reproduced above, is a cross-sectional view of a portion of two solar cells, cells 2 and 3. Cornfeld ¶ 141. Cells 2 and 3 have been separated from the wafer by a cut through channel (511), therefore, periphery mesa (517) is not part of the assembly shown in the figure. *Id.* ¶ 139.

The fact that Figure 19C of Cornfeld discloses electrical contact material (501) on at least a portion of the wing portion (516 and 517) does not eliminate the disclosure of Figure 12A, which teaches the wing portion substantially free of electrical contact material. *See* Cornfeld Figs. 12A and

19C. Therefore, Cornfeld discloses each and every element of claim 1. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009) (To serve as an anticipatory reference, “the reference must disclose each and every element of the claimed invention, whether it does so explicitly or inherently”).

Based on the facts and arguments presented, Appellants have not persuaded us that the Examiner reversibly erred in finding claim 1 anticipated by Cornfeld.

Rejection of claim 2 over Cornfeld as evidenced by Varghese

Appellants’ argument for patentability of claim 2 is the same argument as for patentability of claim 1 over Cornfeld. Appellants fail to persuade us that the Examiner reversibly erred in finding claim 2 to be anticipated by Cornfeld as evidenced by Varghese.

Rejection of claims 22 and 23 over Cornfeld in view of Takehara

Claims 22 and 23 are rejected as obvious over Cornfeld in view of Takehara. Final Act. 4. Appellants’ argument for patentability of claims 22 and 23 is that Cornfeld’s wing portions include electrical contact material, as argued for patentability of claim 1, and the combined references, therefore, fail to teach an upper portion of a wing portion that is substantially free of electrical contact material. App. Br. 11. For the reasons provided above, Appellants fail to persuade us that the Examiner reversibly erred in concluding that claims 22 and 23 are obvious over Cornfeld in view of Takehara.

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DECISION

For the above reasons, the Examiner's rejections of claims 1–6, 8, 22, and 23 are 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) (2015).

AFFIRMED