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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MUKTA G. FAROOQ, IAN D. MELVILLE,
KEVIN S. PETRARCA, and KENNETH P. RODBELL

Appeal 2019-002112
Application 13/409,643
Technology Center 2800

Before ROMULO H. DELMENDO, CHRISTOPHER L. OGDEN, and LILAN REN, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

The Appellant[1] appeals under 35 U.S.C. § 134(a) from the Primary Examiner's final decision to reject claims 1–6, 9, 16, 23, 24, 29–32, and 34.[2] We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. The Appellant identifies "International Business Machines Corp." as the real party in interest (Appeal Brief filed July 23, 2018 ("Appeal Br.") at 1).

[2] *See* Appeal Br. 5–10; Reply Brief filed December 28, 2018 ("Reply Br.") at 2–11; Final Office Action entered March 27, 2018 ("Final Act.") at 4–26; Examiner's Answer entered October 31, 2018 ("Ans.") at 4–25.

I. BACKGROUND

The subject application is a divisional of Application 11/836,819 filed August 10, 2007 ("parent application"). The parent application issued as US 8,999,764 B2 on April 7, 2015 to the same inventive entity named in the current application.

The subject matter on appeal relates to an integrated circuit (IC) chip with reduced "soft errors" caused by ionizing radiation such as alpha particles, beta radiation, cosmic rays, high-frequency electromagnetic radiation, or other types of radiation capable of producing a change in electrical state (Specification filed March 1, 2012 ("Spec.") ¶¶ 2–3). Representative claim 1 is reproduced from the Claims Appendix to the Appeal Brief, as follows:

> 1. An integrated circuit (IC) chip comprising:
> a first layer including at least one of a transistor, a resistor, a capacitor or an interconnecting wire;
> a first metallization layer formed over the first layer; and
> at least one dielectric layer formed over the first metallization layer, the at least one dielectric layer including ionizing radiation blocking material positioned therein and forming a complete plane over the first layer and configured to block or absorb ionizing radiation,
> wherein the at least one dielectric layer includes:
> a first dielectric layer;
> a conductor formed in the first dielectric layer;
> a second dielectric layer formed directly over and contacting the conductor and the first dielectric layer;
> a discontinuous ionizing radiation blocking film formed over at least a portion of the second dielectric layer, the discontinuous ionizing radiation blocking film positioned above and overlapping the conductor;
> a back end of line (BEOL) dielectric layer formed over the discontinuous ionizing radiation blocking film;

> an opening formed through the discontinuous ionizing radiation blocking film and the BEOL dielectric layer;
>
> a third dielectric layer formed over the BEOL dielectric layer and a portion of the second dielectric layer; and
>
> a contact formed through the second dielectric layer and the third dielectric layer to contact the conductor,
>
> ***wherein an inner edge of the discontinuous ionizing radiation blocking film is distanced from an edge of the contact and separated by the third dielectric layer, and wherein the conductor laterally overlaps the opening***.

(Appeal Br. 11–12 (emphasis added)).

II. REJECTIONS ON APPEAL

The claims stand rejected under pre-AIA 35 U.S.C. § 103(a), as follows:

A. Claims 1, 2, 4–6, 9, 16, 24, 29–32, and 34 as unpatentable over Kong et al.[3] ("Kong"), Saito et al.[4] ("Saito"), and Trenkler et al.[5] ("Trenkler"); and

B. Claims 3 and 23, and in the alternative, claims 1, 2, 4–6, 9, 16, 24, 29–32, and 34 as unpatentable over Kong, Saito, Trenkler, and Buynoski et al.[6] ("Buynoski").

(Ans. 4–25; Final Act. 4–26).

[3] US 6,180,430 B1, issued January 30, 2001.

[4] JP 2002-9074, published January 11, 2002.

[5] US 4,890,083, issued December 26, 1989.

[6] US 6,207,553 B1, issued March 27, 2001.

III. DISCUSSION

1. Grouping of Claims

The Appellant relies on the same arguments for all claims on appeal, focusing only on the two independent claims—i.e., claims 1 and 16 collectively (Appeal Br. 5–10). In addition, the Appellant relies on the same arguments for both rejections (*id.*). Therefore, we decide this appeal on the basis of claim 1, which we designate as representative pursuant to 37 C.F.R. § 41.37(c)(1)(iv). Claims 2–6, 9, 16, 23, 24, 29–32, and 34 stand or fall with claim 1.

2. The Examiner's Position

The Examiner finds that Kong describes a structure having most of the limitations recited in claim 1, including the limitations highlighted in reproduced claim 1 above (Ans. 4–5; Non-Final Act. 5–6). The Examiner makes a number of determinations with respect to claim 1. For example, regarding claim 1's scope encompassing one *or more* dielectric layers, the Examiner provides a reason that explains why it would have been obvious to a person having ordinary skill in the art to duplicate or repeat distinct dielectric layers (Ans. 8). In addition, the Examiner provides reasons that explain why it would have been obvious to a person having ordinary skill in the art to provide a certain dielectric layer thickness and to make the thicknesses of the first dielectric layer and a contact to be the same, although such limitations are not specifically recited in claim 1 (*id.* at 9–10, 12). Saito was cited to show an integrated circuit or chip into which Kong's device may be fabricated (*id.* at 15). Trenkler was cited as further evidence to show that copper, which was found to be disclosed in Kong, is inherently capable of being used for ionizing radiation blocking (*id.* at 13, 15).

3. The Appellant's Contentions

The Appellant does not specifically refute the Examiner's combination of Kong with Saito and Trenkler (Appeal Br. 5–10). Rather, the Appellant's arguments are limited to the following: (i) that claim 1 "include[s] features previously deemed allowable by the Examiner in [the parent application]"—i.e., features recited in the limitations highlighted in reproduced claim 1 above ("wherein an inner edge of the discontinuous ionizing radiation blocking film is distanced from an edge of the contact and separated by the third dielectric layer, and wherein the conductor laterally overlaps the opening"), which were previously presented in claims 20–22[7] of the parent application (*id.* at 6–7); (ii) that Kong, Saito, and Trenkler do not teach or suggest the above-highlighted limitations (*id.* at 7–8); and (iii) "the Examiner's duty to provide a clearly articulated rejection has not been met" because the Examiner's rejection spans 19 pages in the Final Office Action and the rationales for rejecting claim 1 are separated (*id.* at 8–9).

The Appellant's arguments fail to identify prejudicial or reversible error in the Examiner's rejection. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011).

Regarding the prosecution in the parent application, we are in agreement with the Examiner's position that the claims of each application must be decided on their own merits (Ans. 22–25). Claims 20–22 in the parent application were directed to an independent and distinct *method* comprising specific steps, whereas current claim 1, filed in a divisional application of the parent, is directed to an integrated chip. In addition, consistent with the Examiner's position, the scopes of claims 20–22 are not

[7] Application 11/836,819, Amendment filed June 23, 2014.

coextensive with that of current claim 1. For example, current claim 1 does not recite the limitation "wherein the second layer forming includes forming the ionizing radiation blocking layer across more than one second layer, the ionizing radiation blocking layer being laterally discontinuous in any one second layer but forming the substantially complete plane in a vertical sense" found in parent application claim 19 from which claim 20 depended (Application 11/836,819, Amendment filed June 23, 2014 at 4). Thus, although the Examiner indicated allowability of claims 20–22 in the parent application (Application 11/836,819, Office Action August 25, 2014, 9), the Examiner did not say that these claims were allowable based on the "features" (i.e., the limitations highlighted in reproduced claim 1 above) that now form the basis of the Appellant's argument. But even if we assume that the Examiner had so stated in the parent application, the PTO has an obligation to ensure that only patentable claims are issued in the current application at all times. *Cf. BlackLight Power, Inc. v. Rogan*, 295 F.3d 1269, 1274 (Fed. Cir. 2002) ("[T]his court sustained extraordinary action when the [Director] in good faith believed that such action was required to ensure the issuance of valid patents, observing that 'the [Director] has an obligation to refuse to grant a patent if he believes that doing so would be contrary to law.'") (internal citation omitted).

Turning to the Appellant's substantive argument that Kong, Saito, and Trenkler do not teach or suggest the limitations highlighted in reproduced claim 1 above ("wherein an inner edge of the discontinuous ionizing radiation blocking film is distanced from an edge of the contact and separated by the third dielectric layer, and wherein the conductor laterally overlaps the opening"), the Examiner provides specific factual findings

regarding these limitations (Ans. 4–5). The Appellant does not structurally distinguish the configurations for Kong's dielectric sidewall spacers (e.g., **70B**), metal structures (radiation blocking films) (e.g., **38B**), and contacts (e.g., **36B**) as shown in Figure 5 (col. 5, ll. 42–47; col. 5, l. 60–col. 6, l. 4) from that shown for the Appellant's configuration as shown in Figure 6. Indeed, the Appellant does not address, let alone show reversible error in, the Examiner's findings (Appeal Br. 7–8).

The Appellant's argument that the Examiner's findings and analysis are lengthy and poorly organized (e.g., Final Act. 4–26) does not persuade us of reversible error in the substantive findings in support of the rejection. The Examiner's articulated rejection could be more elucidated but is not "'so uninformative that it prevents the [A]pplicant from recognizing and seeking to counter the grounds for rejection.'" *Jung*, 637 F.3d at 1362 (quoting *Chester v. Miller*, 906 F.2d 1574, 1578 (Fed. Cir. 1990)).

Here, the Examiner provides findings in support of the rejection (e.g., Final Act. 5–6). As in *Jung*, 637 F.3d 1362–63, the Appellant does not effectively refute them (Appeal Br. 7–9).

For these reasons, we uphold the Examiner's rejection as maintained against claim 1, with all other claims standing or falling therewith.

IV. CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	References	Affirmed	Reversed
1, 2, 4–6, 9, 16, 24, 29–32, 34	103(a)	Kong, Saito, Trenkler	1, 2, 4–6, 9, 16, 24, 29–32, 34	
1–6, 9, 16, 23, 24, 29–32, 34	103(a)	Kong, Saito, Trenkler, Buynoski	1–6, 9, 16, 23, 24, 29–32, 34	

Claims Rejected	35 U.S.C. §	References	Affirmed	Reversed
Overall Outcome			1–6, 9, 16, 23, 24, 29–32, and 34	

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

AFFIRMED