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Guardian Glass, LLC (Nixon) c/o KCPS IP Dept./Shannon Gonsalves 4111 E. 37th Street North Mail Stop T2C Wichita, KS 67220			ROLLAND, ALEX A	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte GUIZHEN ZHANG, JEREMY CHENG,
GUOWEN DING, MINH HUU LE,
DANIEL SCHWEIGERT, and YU WANG

Appeal 2019-007004
Application 14/816,697
Technology Center 1700

Before MICHAEL P. COLAIANNI, GEORGE C. BEST, and
DEBRA L. DENNETT, *Administrative Patent Judges*.

DENNETT, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Pursuant to 35 U.S.C. § 134(a), Appellant² appeals from the Examiner's decision to reject claims 30–38 of Application 14/816,697. We have jurisdiction under 35 U.S.C. § 6(b).

¹ In our Decision, we refer to the Specification (“Spec.”) of Application 14/816,697 (“the ’697 Application”) filed Aug. 3, 2015; the Final Office Action dated Sept. 11, 2018 (“Final Act.”); the Appeal Brief filed Apr. 15, 2019 (“Appeal Br.”); the Examiner’s Answer dated July 31, 2019 (“Ans.”); and the Reply Brief filed Sept. 27, 2019 (“Reply Br.”).

² We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies Guardian Glass, LLC as the real party in interest. Appeal Br. 3.

For the reasons set forth below, we REVERSE.

STATEMENT OF THE CASE

The '697 Application describes the development of materials for barrier layers used to protect silver reflective coatings. Spec. ¶ 2. The '697 Application describes that silver is very sensitive to and can be easily oxidized by oxygen. *Id.* ¶ 34. The barrier layer prevents oxygen from reaching the silver layer through diffusion blocking characteristics. *Id.* ¶ 35. In particular, the '697 Application describes quaternary alloys, in a barrier layer, said to demonstrate superior transmission and emissivity performance relative to conventional binary alloys. *Id.* ¶¶ 37, 38.

Claims 30 and 38, representative of the '697 Application's claims, are reproduced below from the Claims Appendix of the Appeal Brief.

30. A method of making a coated article, the method comprising:

providing a glass substrate;

forming a first dielectric layer on the glass substrate;

sputter-depositing an infrared (IR) reflective layer comprising silver on the glass substrate, over at least the first dielectric layer;

sputter-depositing a barrier layer on the glass substrate, and over and directly on the IR reflective layer comprising silver, wherein metal content of the barrier layer consists essentially of nickel, chromium, titanium, and aluminum, wherein the barrier layer contains by weight from 5–20% nickel, from 15–40% chromium, from 20–40% titanium, and from 20–40% aluminum;

sputter-depositing a second dielectric layer on the glass substrate, over and directly contacting the barrier layer.

38. A method of making a coated article, the method comprising:

providing a glass substrate;
forming a first dielectric layer on the glass substrate;
sputter-depositing an infrared (IR) reflective layer comprising silver on the glass substrate, over at least the first dielectric layer;
sputter-depositing a barrier layer on the glass substrate, and over and directly on the IR reflective layer comprising silver, wherein metal content of the barrier layer comprises, by weight, from 5–20% nickel, from 15–40% chromium, from 20–40% titanium, and from 20–40% aluminum;
sputter-depositing a second dielectric layer on the glass substrate, over and directly contacting the barrier layer.

REFERENCE

The Examiner relies on US 2008/0187692 A1 to Roquiny et al., issued Aug. 7, 2008 (“Roquiny”) in rejecting the claims on appeal.

REJECTION

On appeal, the Examiner maintains the rejection of claims 30–38 under 35 U.S.C. § 103(a) as obvious over Roquiny.³ Final Act. 3–4.⁴

³ Because this application was filed before the March 16, 2013, effective date of the America Invents Act, we refer to the pre-AIA version of the statute.

⁴ The Final Office Action indicates that claim 37 has been withdrawn from consideration as being directed to a non-elected invention. Final Act. 2. However, the Examiner’s statement of the rejection includes claim 37 (*id.* at 3) and there is a substantive rejection of claim 37 included in the Final Office Action and the Answer (*id.* at 4; Ans. 3). We assume, therefore, that claim 37 is subject to present appeal.

DISCUSSION

Rejection of Claims 30–38 as obvious over Roquiny

The Examiner finds that Roquiny teaches or suggests the limitations of claims 30–38, including the barrier layer’s four metals and each of their requisite amounts. Final Act. 3–4.

Appellant argues for patentability based on limitations recited in independent claims 30 and 38. *See* Appeal Br. 7–14; Reply Br. 2–7.

a) Claim 30

Appellant argues that the § 103(a) rejection over Roquiny should be reversed because the “subject matter of claim 30 is not found in Roquiny.” Appeal Br. 8. Appellant argues that the claimed barrier layer’s metal content “is restricted to the four identified materials” of nickel, chromium, titanium, and aluminum. *Id.*

We reverse for the reasons set forth in Appellant’s Appeal and Reply Briefs. We add the following for emphasis.

The Examiner finds that Roquiny’s “barrier layer comprises nickel, chromium, titanium, aluminum, and mixtures or alloys thereof.” Final Act. 3 (citing Roquiny ¶ 25). According to the Examiner, the phrase “consists essentially of,” as recited in claim 30, is construed as having the same scope as “comprising” because both the Specification and claim 30 lack “an indication of [what] the basic and novel characteristics” are. Final Act. 3. In response to Appellant’s arguments, the Examiner argues that the ’697 Application includes a variety of embodiments that are not the claimed quaternary alloys. Ans. 3.

We disagree with the Examiner’s finding. *See* Reply Br. 2–3. In our view, the Examiner’s construction of the phrase “consists essentially of” as

having the same meaning as “comprising” is unreasonable because the Specification emphasizes the superior performance of quaternary alloys as oxygen barrier layers relative to conventional binary alloys. Spec. ¶¶ 37, 38; Figs. 5, 6. We agree with Appellant that “[t]he basic and novel properties referenced by the ‘consists essentially of’ language in claim 30 clearly refer to the metal content.” Appeal Br. 13.

In view of the proper claim construction, Roquiny does not describe or suggest a barrier layer which is limited to nickel, chromium, titanium, and aluminum. The portion of Roquiny relied upon by the Examiner expressly describes four additional metals, i.e., Nb, Ta, Zn, and Cu, which are suitable for Roquiny’s method, but are excluded from the scope of the presently claimed subject matter. *See* Roquiny ¶ 25. On this basis, the Examiner errs reversibly in determining claim 30 to be obvious over Roquiny. Therefore, we do not sustain the rejection of claim 30. For the same reasons, we do not sustain the rejection of claims 31–37, which depend from claim 30.

b) Claim 38

The Examiner finds that Roquiny does not explicitly disclose “the particular weight amounts of the components in the alloy,” as required by claim 38. Final Act. 3.

The Examiner, however, finds that Roquiny teaches that the barrier layer’s components “are selected to protect the underlying silver-based reflection layer” as “the barrier layer [is] more readily oxidizing than the silver layer.” *Id.* 3–4, (citing Roquiny ¶ 25). The Examiner determines that it would have been obvious to one of ordinary skill in the art at the time of the invention “to routinely optimize the relative amounts of components in the alloy” because the ratio of alloy components “are a result effective

variable.” Final Act. 4. According to the Examiner, varying the relative metal content has “the art recognized effect of tuning the sacrificial nature of the barrier layer to effectively protect the silver layer.” *Id.*

Appellant argues that there is “no disclosure in Roquiny of combining Ni, Cr, Ti, and Al” in the barrier layer, nor the layer’s relative metal amounts. *See* Appeal Br. 10. Although Roquiny teaches forming a barrier layer having 80% Ni and 20% Cr, Appellant contends that there is no teaching or suggestion as to why one of ordinary skill in the art would have been motivated “to reallocate that 80% [Ni] down to the claimed level” (i.e., 5–20% Ni). *Id.* at 12. Appellant argues that Roquiny is also silent as to why an ordinarily skilled artisan would have “reallocate[d] [Ni] to Ti and Al, much less to Ti and Al in the claimed amounts (especially since the presence of Ti and Al have not been established).” *Id.*

We agree with the Examiner’s statement regarding the obviousness of discovering an optimum value for a result effective variable. “[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.” *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980); *see also In re Aller*, 220 F.2d 454, 456 (CCPA 1955) (“where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”). The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. It is well settled that, generally speaking, it would have been obvious for an artisan with ordinary skill to develop workable or even optimum ranges for result-effective parameters.

However, the law requires “[a] recognition in the prior art that a property is affected by the variable” to find the variable result-effective. *In*

re Applied Materials, Inc., 692 F.3d 1289, 1297 (Fed. Cir. 2012). Although optimization of a variable *known* to be result effective is generally prima facie obvious, as the predecessor to our reviewing court explained over thirty years ago, where “the parameter optimized was not recognized to be a result-effective variable” is an exception. *See In re Antonie*, 559 F.2d 618, 620 (CCPA 1977).

On the facts before us, we find nothing to indicate the ratio of the metals in the barrier alloy was known to be a result-effective variable. On this basis, the Examiner erred reversibly in determining claim 38 to be obvious over Roquiny. Therefore, we do not sustain the rejection of claim 38.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
30–38	103(a)	Roquiny		30–38

REVERSED