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TAYLOR IP, P.C. P.O. Box 560 142. S Main Street Avilla, IN 46710			BOLDEN, ELIZABETH A	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ULRICH FOTHERINGHAM, MICHAEL SCHWALL,
ULRICH PEUCHERT, MIRIAM KUNZE, MARTUN HOVHANNISYAN,
and HOLGER WEGENER

Appeal 2023-001631
Application 15/891,723
Technology Center 1700

Before BEVERLY A. FRANKLIN, GEORGE C. BEST, and
CHRISTOPHER C. KENNEDY, *Administrative Patent Judges*.

KENNEDY, *Administrative Patent Judge*.

DECISION ON APPEAL

The Appellant¹ appeals under 35 U.S.C. § 134(a) the Examiner's decision rejecting claims 1–10, 15, 16, and 21–29. We have jurisdiction under 35 U.S.C. § 6(b). We AFFIRM.

BACKGROUND

The subject matter on appeal relates to glass compositions that have specific degrees of angular freedom and/or coefficients of thermal

¹ “Appellant” refers to “applicant” as defined in 37 C.F.R. § 1.42. The Appellant identifies the real party in interest as SCHOTT AG. Appeal Br. 3.

expansion. *E.g.*, Spec. ¶ 1; Claim 1. Claim 1 is reproduced below from pages 32–33 (Claims Appendix) of the Appeal Brief:

1. A glass, having a composition which is characterized by the following constituent phases:

A constituent phase	min.	max.
Albite	10 mol%	40 mol%
Reedmergnerite	10 mol%	65 mol%
Potassium reedmergnerite	0 mol%	32 mol%
Grossular	0 mol%	10 mol%
Cordierite	0 mol%	10 mol%
Willemite	0 mol%	15 mol%
Silicon dioxide	0 mol%	50 mol%
Diboron trioxide	0 mol%	15 mol%
Titanium wadeite	0 mol%	24 mol%
Strontium feldspar	0 mol%	20 mol%
Celsian	0 mol%	20 mol%

wherein a number of degrees of angular freedom per atom is calculated according to a formula:

$$f = \frac{\sum_{i=1}^n c_i z_i f_i}{\sum_{i=1}^n c_i z_i} \quad (1)$$

wherein f is the number of degrees of angular freedom per atom, c_i is a mole fraction of the i -th constituent phase, z_i is a number of atoms per structural unit in the i -th constituent phase, f_i is a number of degrees of angular freedom per atom in the i -th constituent phase, and “ n ” is a number of constituent phases, such that said number of degrees of angular freedom per atom is not more than 0.29,

wherein a coefficient of thermal expansion is calculated according to formulae:

$$\overline{E_{pot}} = \frac{\sum_{i=1}^n c_i \sum_{j=1}^m z_{i,j} E_{pot,j}}{\sum_{i=1}^n c_i \sum_{j=1}^m z_{i,j}}, \quad (2)$$

wherein E_{pot} is an average potential well depth, m is a number of cation types present, E_{potj} is a potential well depth for a j -th cation type, $z_{j,i}$ is a number of cations of the j -th type in an i -th constituent phase, c_i is a mole fraction of the i -th constituent phase, and “ n ” is a number of constituent phases; and

$$CTE = \left(\frac{51815 \left(\frac{kJ}{Mol} \right)}{E_{pot}} - 27.205 \right) ppm/K, \quad (3)$$

wherein CTE is the thermal coefficient of thermal expansion, such that said coefficient of thermal expansion is from 7.01 ppm/K to 8 ppm/K.

REJECTIONS ON APPEAL

No.	Claims Rejected	35 U.S.C. §	References
1	23	102(a)(1)	Nagai ²
2	1–10, 15, 16, 21, 22, 24–29	103	Nagai
3	1–10, 15, 16, 21–29		Nonstatutory Double Patenting (App. No. 15/892,029, now U.S. Patent No. 10,822,265)

ANALYSIS

Rejection 1

The Examiner finds that Nagai anticipates claim 23. Claim 23 is similar to claim 1, reproduced above, but claim 23 differs in relevant part in that (1) it does not recite the number of degrees of angular freedom, and

² US 5,277,946, issued Jan. 11, 1994.

(2) it recites that the coefficient of thermal expansion at the glass surface “corresponds to at least 50% and not more than 99% of the coefficient of thermal expansion” in the bulk glass. Appeal Br. 38–39 (Claims Appendix).

The Examiner provides a table showing the composition of Nagai’s Example 6. Final Act. 6. The table shows that Nagai’s Example 6 has a composition that falls within the scope of claim 23 in terms of the constituent phases of the glass. *See id.* The Examiner finds that, “[s]ince the composition of the reference is the same as those claimed herein it follows that the glasses of Nagai et al. would inherently possess the properties [i.e., CTE] recited in claim 23.” *Id.* at 5.

That rationale is not persuasive for reasons set forth by the Appellant in the Appeal Brief. *See* Appeal Br. 18–21 (citing Spec. ¶¶ 85–88). The Appellant provides a reasonable explanation of how the process disclosed by the Specification affects the CTE of the glass at the surface relative to the interior. *See id.* The Appellant explains that Nagai includes no disclosures that might indicate that Nagai’s process includes features similar to those relied on by the Appellant. *See id.* Thus, the Appellant provides a reasonable basis to believe that Nagai’s glass may not inherently possess the claimed CTE characteristics despite having a constituent phase composition that falls within the scope of claim 23. *See id.*

In the Answer, the Examiner fails to address the Appellant’s relevant arguments and instead simply maintains that, because Nagai’s glass composition falls within the scope of the constituent phase composition of claim 23, it must inherently possess the recited characteristics. *See* Ans. 11–12.

On this record, the Examiner fails to carry the Examiner's burden of establishing that Nagai anticipates claim 23.

Rejection 2

The Examiner finds that Nagai's Example 6 has a composition that falls within the scope of claim 1 in terms of the constituent phases of the glass. *See* Final Act. 6–8. The Examiner finds that Nagai's "Example 6 does not meet the calculated properties [i.e., degrees of angular freedom and CTE] as recited in the claims." *Id.* at 6. The Examiner determines that "[o]ne of ordinary skill in the art would expect that a glass with overlapping compositional ranges would have the calculated properties as recited in claim[] 1." *Id.* at 7.

The Appellant argues that the recited properties result from the specific ratio of constituent phases in the glass, such that not all glasses that have a composition within the scope of claim 23 would inherently possess the recited properties. Appeal Br. 24–28. The Appellant correctly points out that the Examiner's own table shows that Nagai's Example 6 possesses a composition that has ingredients within the scope of claim 1, but a CTE that falls beyond the scope of claim 1. *Id.*; *see also* Final Act. 8 (Examiner's table showing a calculated CTE of 6.6296, which is below the lower end of the CTE range recited by claim 1).

In the Answer, the Examiner rejects the Appellant's arguments because "the claims are directed to the glass article and not a method of making a glass." Ans. 12–13. As best understood, the Examiner's position is that any glass that has a composition within the scope of claim 1 must necessarily possess the properties recited by claim 1. *See id.*

That argument is unpersuasive because the Examiner's own table shows that a glass composition within the scope of the constituent phase ranges of claim 1 does not necessarily possess the properties recited by claim 1. *See* Final Act. 7–8. Although we recognize that the degrees of angular freedom in the Examiner's table falls within the scope of claim 1, as noted above, the CTE falls slightly beyond the scope of the claim 1, and the Examiner provides no rationale to bridge that gap. We decline to attempt to do so in the first instance.

On this record, we reverse the Examiner's rejection.

Rejection 3

Rejection 3 concerns a nonstatutory double patenting rejection. *See* Final Act. 8–9. Although a provisional rejection at the time of the Final Action, the application over which the rejection was issued has since issued as a patent.

In the Appeal Brief, the Appellant does not acknowledge or address the double patenting rejection. *See generally* Appeal Br.

In the Answer, the Examiner maintains the rejection. Ans. 8–9.

In the Reply Brief, the Appellant addresses the rejection for the first time. Reply Br. 9.

The Appellant's arguments in the Reply Brief are untimely, and we decline to consider them. *See* 37 C.F.R. § 41.41(b)(2). Because the Appellant did not assert error in the double patenting rejection in the Appeal Brief, and the arguments in the Reply Brief are untimely, we summarily affirm the double patenting rejection as it appears in the Final Action, and we express no opinion regarding the propriety of a double patenting

rejection if the claims of the issued patent have materially changed since entry of the Final Action.

CONCLUSION

In summary:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
23	102(a)(1)	Nagai		23
1-10, 15, 16, 21, 22, 24-29	103	Nagai		1-10, 15, 16, 21, 22, 24-29
1-10, 15, 16, 21-29		Nonstatutory Double Patenting (App. No. 15/892,029, now U.S. Patent No. 10,822,265)	1-10, 15, 16, 21-29	
Overall Outcome			1-10, 15, 16, 21-29	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED