UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MODERUSTIC, INC.,[1]
Patent Owner and Appellant

v.

AMERICAN FIREGLASS, INC.,
Requester and Respondent

Appeal 2013-009126
Reexamination Control No. 95/001,724
United States Patent 7,976,360 B2[2]
Technology Center 3900

Before JOHN C. MARTIN, DANIEL S. SONG, and MICHAEL L. HOELTER, *Administrative Patent Judges*.

MARTIN, *Administrative Patent Judge*.

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[1] Moderustic, Inc., is identified as the assignee on the first page of Patent 7,976,360 B2 (hereinafter "'360 patent") and in the USPTO assignment records at Reel/Frame 025926/0845, dated March 7, 2011. Edward E. Jaunzemis, one of the two co-inventors named in the '360 patent, is identified as owning Moderustic, Inc., in the December 7, 2007, "Declaration Under Rule 132" by Mr. Jaunzemis (hereinafter "Jaunzemis Declaration"), Ex. F to "Patent Owner's Appeal Brief."

[2] Issued to Edgar Edward Jaunzemis and Claudia Sue Jaunzemis on July 12, 2011, based on Application 11/319,957, filed December 28, 2005, as

(Continued on next page.)

Appeal 2013-009126
Reexamination Control 95/001,724
Patent 7,976,360 B2

DECISION ON APPEAL

Patent Owner appeals under 35 U.S.C. §§ 134(b) and 315(a) from the Examiner's rejections of claims 1-17 (which are all of the claims) of the '360 patent. Requester is a party to this appeal pursuant to 35 U.S.C. § 315(b)(2).

We have jurisdiction under 35 U.S.C. §§ 6, 134, and 315.

We affirm the Examiner's rejections and designate the affirmance of these rejections as new grounds of rejection pursuant to our authority under 37 C.F.R. § 41.77(b).

I. STATEMENT OF THE CASE

A. Requester's "Lack of Standing" Argument

"Patent Owner's Appeal Brief" (hereinafter cited as "P.O. Br.") identifies Mr. Jaunzemis as the "Patent Owner" and the real party in interest. P.O. Br. cover sheet and 1, heading I.[3] Requester, based on the fact that

Moderustic, Inc., is identified as the assignee of record at Reel/Frame 025926/0845 of the USPTO assignment records, argues:

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a continuation-in-part of Application 10/413,620, filed on April 14, 2003 (abandoned).

[3] The cover of this brief incorrectly identifies the reexamination control number as 95/001,320.

> B. ARGUMENT REGARDING LACK OF STANDING TO FILE APPEAL BRIEF
>
> The Appellant identified as Edgar Edward Jaunzemis lacks standing to file this appeal brief at issue, and thus, the appeal is not proper and should be disregarded.
>
> 37 CFR § 41.61(a)(1) states "[u]pon the issuance of a Right of Appeal Notice under § 1.953 of this title, the owner may appeal to the Board with respect to the final rejection of any claim of the patent by filing a notice of appeal within the time provided in the Right of Appeal Notice..." [underline added]. The term "[o]wner means the owner of the patent undergoing inter partes reexamination under § 1.915 of this title." 37 CFR § 41.60. Further, "Appellant(s) may once, within time limits for filing set forth in § 41.66, file a brief and serve the brief on all other parties..." 37 CFR § 41.67.
>
> The appeal brief has been filed by a party other than the patent "owner" as defined by the above mentioned statute, and thus the Appellant lacks standing and the appeal is not proper and should not be considered.

"Replacement Respondent Brief" (hereinafter "Req. Br.") 3-4 (brackets in original). Requester also states: "Respondent disputes Appellant's statement of real party in interest for the reasons set forth above in Section B." Req. Br. 4, heading C.

These arguments are in effect a request for the Board to strike Patent Owner's Brief for failing to comply with the rules, which is not an appealable matter. This request is dismissed because striking a paper from a reexamination file is properly raised only by a petition filed under 37 C.F.R. § 1.181. *See Streamlined Patent Reexamination Proceedings; Notice of Public*

Meeting, 76 Fed. Reg. 22584, 22858 (Apr. 25, 2011) (describing examples of petitions commonly filed in reexamination proceedings, including "[s]triking another party's improper paper (or portion thereof) from the file," which the notice indicates is petitionable under 37 C.F.R. § 1.181). No such petition has been filed.

B. Related Appeals

Application 11/319,957, which matured into the '360 patent that is the subject of this reexamination proceeding, was the subject of Board Appeal 2009-008628. In a Decision on Appeal entered on December 10, 2010 (hereinafter "Prior Decision"), the Board reversed all of the Examiner's rejections, including a rejection of claims 1-20 under 35 U.S.C. § 103(a) for obviousness over Georgantas[4] and Arpaio,[5] two of the references relied upon in the rejections before us in this appeal. Prior Decision 5-6. Furthermore, pursuant to 37 C.F.R. § 41.50(b), the Board, relying on the above-noted Jaunzemis Declaration, entered a new ground of rejection of independent application claims 1, 9, and 17 (and other claims) under 35 U.S.C. § 103(a) "as obvious in view of Arpaio, the Jaunzemis Declaration, and Georgantas." *Id.* at 7.

Applicant, pursuant to 37 C.F.R. § 41.50(b)(1), elected to reopen prosecution before the Examiner and filed amendments to independent claims

[4] Georgantas, US 6,409,500 B2, issued June 25, 2002.

1, 9, and 17 and other claims. '957 Application, Amendment filed on February 10, 2011, at 4-7. Following further claim amendments filed February 25, 2011, and May 3, 2011, claims 1, 2, 4-12, and 14-19 (i.e., all of the pending claims) were indicated as allowable in a "Notice of Allowance and Issue Fee(s) Due," mailed May 18, 2011. Amended application claims 1, 9, and 17 correspond to claims 1, 8, and 15 of the '360 patent.

C. This Reexamination Proceeding

The "Request for *Inter Partes* Reexamination of U.S. Patent 7,976,360" (hereinafter "Request"), filed August 24, 2011, requested reexamination of claims 1-17, all of the original patent claims, under 35 U.S.C. §103(a). The Request proposed rejections of claims 1-17 under 35 U.S.C. § 103(a) based on the following combinations of references:

(1) "The ASTM Standard[6] in view of Georgantas and Arpaio" (Request 19);

(2) "The Glazing Manual[7] in view of Georgantas and Arpaio" (*id.* at 27); and

(3) "Georgantas, as read in light of the newly discovered Disclosure Document, and in view of Arpaio." *Id.* at 35.

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[5] Arpaio, U.S. Patent 5,486,135, issued January 23, 1996.

[6] *Designation C 1048 – 97b, Standard Specification for Heat-Treated Flat Glass—Kind HS, Kind FT Coated and Uncoated Glass*, pages 1-7 (1998). Ex. D to P.O. Br.

The Request (at iii) identifies the "Disclosure Document" (Ex. H to Request) as an "Accelerated Examination Support Document filed on January 19, 2007 in U.S. Patent Application No. 11/625,195." The '195 application (now abandoned) identifies itself as a continuation of Application 11/319,957, which issued as the '360 patent under reexamination. The Disclosure Document (at 3-5) compares the claims of the '195 application to Georgantas. According to the Request, the Disclosure Document "sheds new light on the teachings of Georgantas" because it contains admissions regarding Georgantas that contradict assertions made to obtain allowance of the '195 application. Request 14. For this reason, the Request argues (at 15) that a substantial new question of patentability (SNQ) is raised by Georgantas when read in view of the Disclosure Document.

The Examiner ordered reexamination of all claims in an October 21, 2011, "Order Granting/Denying Request for Inter Partes Reexamination" (hereinafter "Order") at 2. The Examiner determined that the ASTM Standard and the Glazing Manual each raise a substantial new question of patentability (SNQ) (Order 6-7) but determined that Georgantas when read in view of the Disclosure Document does not. *Id.* at 12. The Examiner also concluded that an SNQ is not raised by Georgantas (when read in view of the Disclosure Document) in view of Arpaio. *Id.*

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[7] *Glazing Manual*, Glass Ass'n of North America (1997). Ex. E to P.O. Br.

In a non-final Office action also mailed on October 21, 2011, the Examiner rejected claims 1-17 under 35 U.S.C. § 103(a) based on the following grounds, which are the grounds before us in this appeal:

(i) "Arpaio in view of Georgantas, the Jaunzemis Declaration and the ASTM Standard" (*id.* at 4); and

(ii) "Arpaio in view of Georgantas, the Jaunzemis Declaration and the Glazing Manual." *Id.* at 7.

Patent Owner's "Response and Amendment to Office Action in *Inter Part[]es* Reexamination," filed December 19, 2011, added (at 15) new claims 18-26. These claims were subsequently canceled.[8]

The above-noted rejections of claims 1-17 were adhered to in the March 2, 2012, Action Closing Prosecution ("ACP") at pages 5 and 9 and in the May 25, 2012, Right of Appeal Notice ("RAN") at pages 4 and 7.

Patent Owner filed a Notice of Appeal on June 25, 2012, and the above-noted "Patent Owner's Appeal Brief" on September 10, 2012.

A "Third Party Requester's Respondent's Brief Pursuant to 37 C.F.R. § 41.68," filed on October 9, 2012, was *sua sponte* replaced on October 10, 2012, by the above-noted "Replacement Respondent Brief."

The Examiner's Answer, mailed March 13, 2013, incorporates the RAN by reference without adding any further analysis. No rebuttal brief was filed by either party.

D. *The Invention Described in the '360 Patent*

The invention described in the '360 patent relates to "processing broken glass waste product into useful smooth glass pieces useful in, for example, lapidary construction, art, and functional interior and exterior decorating." '360 patent 1:17-52. The patent explains:

> One type of glass waste product is broken glass. In general, once a glass pane is broken, there is little use for the broken shards or the remainder of the broken glass pane. *Broken tempered glass*, such as window shields for automobiles, *presents a particular recycle problem because the resultant glass comprises small, sharp, glass pieces that are fire resistant.*

Id. at 1:53-59 (emphasis as added).

The solution presented in the '360 patent is described as applicable to "normal heat-treated glass" (*id.* at 2:5-6) and involves "placing a plurality of heat-treated glass fragments into a tumbling apparatus" (*id.* at 2:10-11), followed by tumbling the glass fragments "for a predetermined period of time such that surfaces of the heat-treated glass fragments are smoother than prior to tumbling." *Id.* at 2:14-17.[9] The tumbling operation can also include placing an aqueous or non-aqueous additive in the tumbling apparatus along with the heat-treated glass fragments. *Id.* at 2:32-38.

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[8] April 2, 2012, "Response and Amendment to Action Closing Prosecution in *Inter Part[]es* Reexamination," at 13.

The '360 patent describes "heat-treated glass" (a term that does not appear in the claims) as follows:

> [T]he term heat-treated glass shall refer to any glass that is processed to create a surface compression such that the fraction pattern of the glass results in many small glass fragments. Hence, the term heat-treated glass shall refer to, for example, *fully tempered glass*, *heat-strengthened glass, also known as toughened glass*, *or any other glass heat processed to create a similar fracture pattern*.

Id. at 5:35-38. The '360 patent further describes "fully tempered glass" and "toughened glass" as follows:

> The heat-treated glass fragments can be formed from *fully tempered or toughened glass*. For example, the heat-treated glass fragments can be formed from *tempered glass* that has been heated to a temperature in the range of about 1,200° to 1,600° Fahrenheit and rapidly cooled to a temperature below 600° Fahrenheit. In this case, the *tempered glass* has a surface compression of at least 10,000 PSI. Alternatively, each glass fragment can be formed from *toughened glass* that has a surface compression of at least 3,500 pounds-force PSI.

Id. at 2:20-29 (emphasis added).

The '360 patent explains that "tumbling the heat-treated glass fragments for 2 hours typically results in smooth, very rounded, bead-like heat-treated glass fragments." *Id.* at 7:15-18. Figure 6 of the '360 patent is reproduced below.

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[9] The fragments can be processed "via tumbling and/or polishing and/or vibrating." '360 patent 5:29-31.

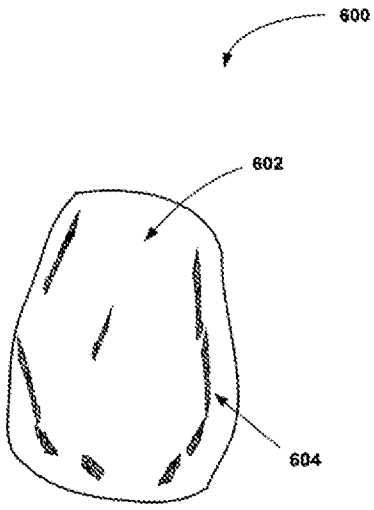

FIG. 6

Figure 6 is an illustration showing an exemplary smoothed, heat-treated glass fragment 600 after being removed from the tumbling apparatus. *Id.* at 7:22-25.

> [T]he smoothed, heat-treated glass fragment 600 *can be directly handled* without hand protection and utilized in various projects including art, decoration, facade, stone work, lapidary, construction, paving, laminates, decorative, functional and nonfunctional interior and exterior decorating.

Id. at 7:27-32 (emphasis added).

Figure 10 of the '360 patent is reproduced below.

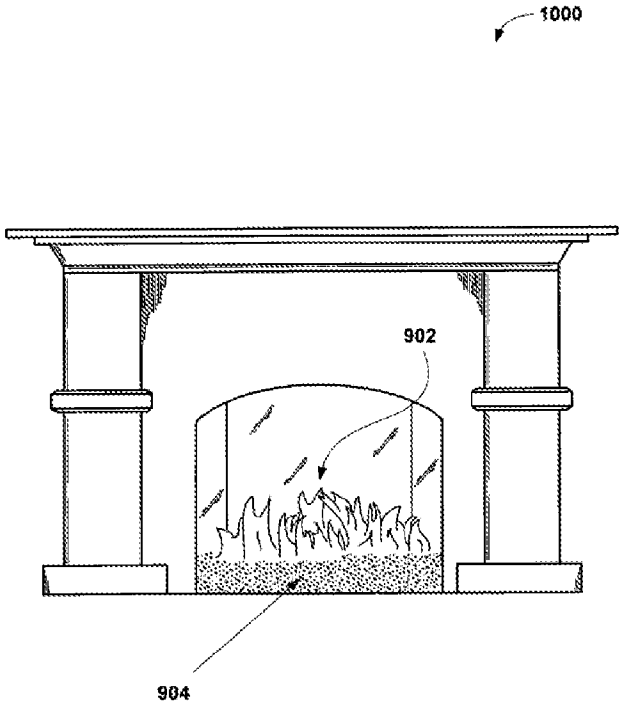

FIG. 10

Figure 10 is an illustration showing an exemplary use of the smoothed, heat-treated glass pieces in a fireplace 1000. *Id.* at 9:36-37. "The smoothed, heat-treated glass pieces 904 will not distort, explode, or otherwise be damaged by the gas fire 902 because the smoothed glass pieces 904 of the embodiments of the present invention have been heat-treated." *Id.* at 9:44-47.

E. The Claims on Appeal

The independent claims (i.e., claims 1, 8, and 15) are reproduced below. Each of these claims recites agitating a plurality of "standard tempered glass fragments." Claim 1 recites that the glass fragments are

formed from "standard fully tempered glass" having a surface compression of at least 3,500 PSI, while claim 8 recites that the glass fragments are formed from "standard fully tempered glass" that that has been rapidly cooled by application of an air quench that leaves a center area of the heated glass hotter than the surfaces. Claim 15 recites that the glass fragments are formed from "standard glass" that: (i) has been heated only once to a temperature of at least 1000° Fahrenheit and rapidly cooled to a temperature below 700° Fahrenheit; (ii) has been rapidly cooled by application of an air quench that leaves a center area of the heated glass hotter than the surfaces; and (iii) has a surface compression of at least 3,500 PSI.

Claims 1, 8, and 15 read as follows.

> 1. (Original) A method for creating smoothed, tempered glass fragments, comprising the operations of:
>
> forming *standard tempered glass fragments* from *standard fully tempered glass* that has a surface compression of at least 3,500 pounds-force per square inch (PSI);
>
> placing a plurality of the standard tempered glass fragments into an agitating apparatus;
>
> agitating the plurality of the standard tempered glass fragments for a predetermined period of time such that surfaces of the tempered glass fragments are smoother than prior to the agitating; and
>
> removing the plurality of the standard tempered glass fragments from the agitating apparatus, wherein the smoothed, tempered glass fragments are created suitable for direct handling.

8 (Original): A method for creating smoothed, tempered glass fragments, suitable for use near a heat source, comprising the operations of:

forming *standard tempered glass fragments* from *standard fully tempered glass* that has been rapidly cooled by application of an air quench that leaves a center area of the heated glass hotter than the surfaces;

placing a plurality of the standard tempered glass fragments into an agitating apparatus;

agitating the plurality of the standard tempered glass fragments for a predetermined period of time such that surfaces of the standard tempered glass fragments are smoother than prior to the agitating, wherein smoothed, tempered glass fragments are created; and

positioning the smoothed, tempered glass fragments in a space designated to contain fire.

15 (Original): A method for creating smoothed, tempered glass fragments, comprising the operations of:

placing a plurality of *standard tempered glass fragments* into an agitating apparatus, wherein each standard tempered glass fragment:

is formed from *standard glass* that has been heated only once to a temperature of at least 1000° Fahrenheit and rapidly cooled to a temperature below 700° Fahrenheit;

has been rapidly cooled by application of an air quench that leaves a center area of the heated glass hotter than the surfaces; and

> has a surface compression of at least 3,500 pounds-force per square inch (PSI);
>
> agitating the plurality of standard tempered glass fragments for a predetermined period of time such that surfaces of the standard tempered glass fragments are smoother than prior to agitating; and
>
> removing the resulting smoothed, tempered glass fragments from the agitating apparatus.

Claims App. to P.O. Br. (emphasis added).[10]

F. The Rejections

As already noted, claims 1-17 stand rejected under 35 U.S.C. § 103(a) for obviousness based on the following grounds:

(i) Arpaio in view of Georgantas, the Jaunzemis Declaration, and the ASTM Standard; and

(ii) Arpaio in view of Georgantas, the Jaunzemis Declaration, and the Glazing Manual.

II. DISCUSSION

Patent Owner does not question the Examiner's reliance (e.g., RAN 4-6 and 8-9) on the Jaunzemis Declaration, the ASTM Standard, and the Glazing

[10] Patent Owner incorrectly states that "[c]laims 1, 8, and 15 all recite, *inter alia*, smoothed, standard tempered glass fragments suitable for direct handling." P.O. Br. 8. The phrase "suitable for direct handling" appears in only claim 1.

Manual for the claim limitations that describe the glass from which the recited "standard tempered glass pieces" are formed, i.e., the "standard fully tempered glass" of independent claims 1 and 8 and the "standard glass" of claim 15. As noted above, these limitations include: (i) having a surface compression of at least 3,500 PSI (claims 1 and 15); (ii) being formed by cooling the heated glass so as to leave a center area of the heated glass hotter than the surfaces (claims 1 and 15); and (iii) being formed by heating the glass only once to a temperature of at least 1000° Fahrenheit and rapidly cooling it to a temperature below 700° Fahrenheit (claim 15).[11]

Instead, Patent Owner questions the Examiner's conclusion that it would have been obvious from the cited references to use Arpaio's tumbler to effect smoothing of pieces of standard tempered glass. The Examiner states the underlying rationale for obviousness as follows:

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[11] The Jaunzemis Declaration states (at para. i): "Standard tempered glass is silica based glass that has been heated only once to a temperature above 1000° Fahrenheit, typically in the range of about 1200°-1600° Fahrenheit, and cooled to a temperature below 700° Fahrenheit, typically below 600° Fahrenheit." The Glazing Manual states (at 4-5) that heat-strengthened glass and fully tempered glass should conform to ASTM C 1048 (i.e., "the ASTM Standard" reference). The ASTM Standard (at 4, paras. 8.1.1.1 and 8.1.1.2) describes "Kind HS, Heat-Strengthened Glass" as having a surface compression between 3500 and 7500 psi and explains that "Kind FT, Fully Tempered Glass" "shall have either a minimum surface compression of 69 MPa (10,000 psi) or an edge compression of not less than 67 MPa (9700 psi) or meet ANSI Standard Z 97.1 or CPSC Standard 16 CFR1201 in accordance with 11.8."

> Arpaio teaches a known technique for smoothing unspecified forms of glass. Further, as evidenced by the Jaunzemis Declaration, discussed above, standard tempered glass is known in the art. Thus, it would have been obvious to a person having ordinary skill in the art at the time of invention to have utilized standard tempered glass as the particular glass smoothed by the process of Arpaio because it is obvious to utilize a known technique (Arpaio) to improve (smoothen) a similar product (standard tempered glass). It would have been predictable that the standard tempered glass would be smoothed by the process of Arpaio because Arpaio is known to already polish glass and Georgantas suggests polishing tempered glass (Georgantas, col. 2, 11. 38-41).

RAN 5. While we agree with the Examiner's conclusion of obviousness and supporting rationale, we prefer to begin our analysis with Georgantas.[12]

Georgantas's invention "relates generally to gas fires, and, more particularly, to an improved substantially soot-free gas fire produced in a fireplace by forming a bed of *broken, tempered glass*, and utilizing one or more specifically formed gas pipes that burn hotter and cleaner." Georgantas 1:11-15 (under heading "Field of the Invention") (emphasis added).

Figure 1 of Georgantas is reproduced below.

[12] We are designating our affirmance of the Examiner's rejections as new grounds of rejection.

FIG. 1

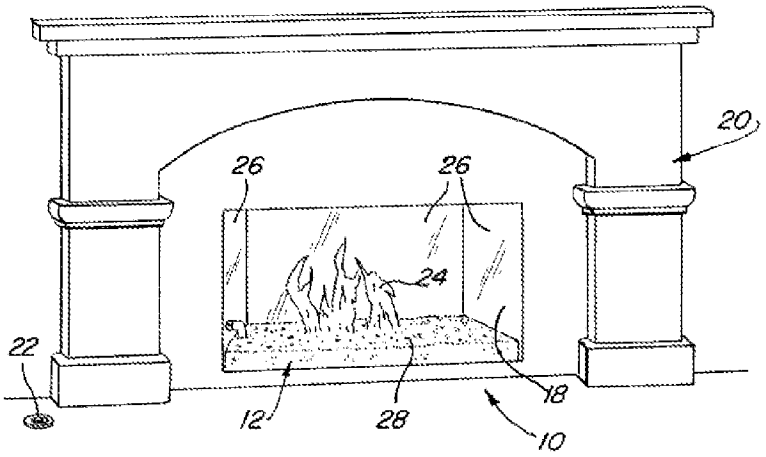

Figure 1 is a front elevational view of a fireplace in accordance with Georgantas's invention. *Id.* at 2:66-67. Georgantas explains that the drawings show "a gas fire 10, comprised of a bed of broken glass pieces 12, described more fully below." *Id.* at 3:41-43. These glass pieces are more particularly described as follows:

> The bed of broken glass pieces 12 is *preferably* formed from broken pieces of *specially-formulated, tempered glass*. The specially-formulated tempered glass comes from *modified lime-soda float glass having most of the iron taken out of it or a borosilicate glass*. Either glass is preferably from 2.5 mm to 20 mm in thickness, and is *baked at least three times* at temperatures of about 1200° F. for 30 minutes or more, followed by rapid cooling of the outer surfaces via controlled air blasts or an oil-water cooling process, while the center is allowed to cool slowly. This achieves a highly desirable state of surface compression between 10,000 and 13,500 psi, perfectly balanced by internal tension, that produces a certain amount of bow or

> wrap in the formed glass, which bow or wrap is associated with each piece of broken glass formed therefrom.

Id. at 3:59-4:6 (emphasis added). This specially-formulated tempered glass is the only type of *tempered* glass that Georgantas describes for use in the gas fireplace. The "Summary of the Invention" exclusively describes the use of "specially-formulated" tempered glass (*id.* at 2:17-18, 21-22, 28-29, 47), as does the Abstract. Furthermore, each of Georgantas's independent claims 1, 9, and 13 requires the use of the specially-formulated tempered glass by reciting that the glass fragments are formed from tempered glass that has been baked three times. Georgantas cols. 5-7.[13]

The Examiner (RAN 4) found the Jaunzemis Declaration sufficient to establish that Georgantas's thrice-baked, specially-formulated tempered glass, when broken, does not yield *standard* tempered glass pieces, as required by the claims. The Jaunzemis Declaration, which has not been rebutted, states in relevant part:

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[13] Georgantas's claim 1, for example, recites in relevant part:

> a bed of broken glass pieces formed from broken, tempered glass that is *baked three times*, and subject to sudden surface cooling, held on the supporting surface in the fireplace and surrounding the at least one gas pipe to allow the soot-free flames to burn near and over top of the bed of broken glass pieces without changing the color or appearance of the bed of broken glass pieces.

Georgantas col. 6 (emphasis added).

> Based on my experience and training in the glass industry, I have concluded that the average person in the glass industry understands standard tempered glass to be glass that has been baked only once. More specifically:
>
> i) Standard tempered glass is silica based glass that has been heated only once to a temperature above 1000° Fahrenheit typically in the range of about 1200°-1600° Fahrenheit, and cooled to a temperature below 700° Fahrenheit, typically below 600° Fahrenheit;
>
> ii) Tempering a silica based glass more than once is devastating to the glass baking equipment because additional baking causes the glass to melt in the oven. Such an occurrences costs ten's of thousands of dollars to repair the tempering oven: and
>
> iii) In over 26 years in the glass industry, I have never encountered tempered glass that has been heated more than once to a temperature above 1000° Fahrenheit during the tempering process.

Patent Owner argues that the rejection is improper because, *inter alia*, "there is absolutely no mention of standard tempered glass fragments in any of the art of record." P.O. Br. 8. More particularly, after correctly noting that "[t]he Jaunzemis Declaration and the ASTM standard merely discuss specifications for standard tempered glass *sheets*" (*id.*) (emphasis added), Patent Owner argues:

> The Examiner argues that the Jaunzemis Declaration and Georgantas somehow teach standard tempered glass fragments from standard fully tempered glass that has a surface compression of at least 3,500 pounds-force per square inch (PSI). However, the Jaunzemis Declaration makes no mention of

> *standard fully tempered glass fragments* and neither does Georgantas.

Id. at 11 (emphasis added). These arguments are unpersuasive for two reasons. The first reason is that the Glazing Manual explains (at 5) that "[w]hen broken, fully tempered glass breaks into a multitude of small fragments." In addition, the Glossary of the Glazing Manual (*id.* at 69 *et seq.*) describes how small these fragments are by explaining (at 71) that the term "Dice" refers to "[t]he more or less cubical pattern of fracture of fully tempered glass." Furthermore, the '360 patent in the "Background of the Invention" acknowledges that fragments of standard tempered glass were known in the art: "One type of glass waste product is broken glass. . . . Broken tempered glass, such as window shields for automobiles, presents a particular recycle problem because the resultant glass comprises small, sharp, glass pieces that are fire resistant." '360 patent 1:53-59.

For the following reasons, we conclude that it would have been obvious to substitute known standard tempered glass fragments (e.g., the "dice" obtained by breaking standard fully tempered glass) for Georgantas's pieces of specially-formulated tempered glass. This substitution is consistent with the following principle in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007): "[W]hen a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result." Patent Owner has not asserted, let alone demonstrated, that the replacement of

Georgantas's pieces of specially-formulated, tempered glass with pieces of standard tempered glass does more than yield a predictable result, i.e., that it yields an unexpected result. *Cf. KSR*, 550 U.S. at 417 ("The fact that the elements worked together in an unexpected and fruitful manner supported the conclusion that Adams's design was not obvious to those skilled in the art."). In the absence of evidence to the contrary, a person skilled in the art would have reasonably expected pieces of standard tempered glass to be capable of withstanding the temperatures encountered within Georgantas's gas fireplace. In fact, the above-quoted passage from the "Background of the Invention" of the '360 patent (at 1:53-59) acknowledges that fragments of standard tempered glass were known to be "fire resistant."

Alternatively, the above-described substitution of materials is also consistent with the "obvious to try" rationale described as follows in *KSR*:

> When there is a *design need or market pressure to solve a problem* and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the *known options* within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under §103.

KSR, 550 U.S. at 421 (emphasis added). A person skilled in the art would have considered small pieces of standard tempered glass (e.g., dice made from standard fully tempered glass) to be a "known option[]" (*KSR*, 550 U.S. at 421) to Georgantas's pieces of specially-formulated tempered glass. As

explained above, a person skilled in the art would have reasonably expected pieces of standard tempered glass to be capable of withstanding the temperatures within Georgantas's gas fireplace, or at least tried pieces of standard tempered glass as a substitute. Furthermore, a person skilled in the art would have recognized that forming the glass pieces from standard tempered glass, which is readily available in new or used condition, will be less expensive than forming the glass pieces from Georgantas's specially-formulated tempered glass, which is thrice-baked and made from "modified lime-soda float glass having most of the iron taken out of it or a borosilicate glass." Georgantas 3:61-65. Thus, the expected reduction in expense would provide an obvious reason for replacing Georgantas's specially-formulated tempered glass pieces with pieces of standard tempered glass.[14]

Patent Owner also contends that the rejection is improper because:

> *Georgantas teaches away* from the use of standard fully tempered glass to solve the problem of economically producing a fireplace bed material because *Georga[n]tas'* ["]specially-formulated, tempered glass" that has been "baked three times" has a "fracture pattern yielding small, relatively harmless fragments...without hazardous jagged edges." ([Georgantas], col. 4, 11. 8-10). Thus, *to avoid the need to further process the broken fragments*, one of ordinary skill in the art, after reading *Georgantas*, and without the hindsight provided by the Jaunzemis '360 patent, would be led to use the *Georgantas* "specially-formulated, tempered glass" that has been "baked

[14] This substitution would also have been expected to avoid the damage to baking equipment described in paragraph ii) of the Jaunzemis Declaration.

> three times" and breaks into smoothed pieces instead of standard fully tempered glass.

P.O. Br. 10 (emphasis altered). *See also id.* at 11 ("According to the teachings of *Georgantas*, it produces glass fragments that *do not require further work* in the manner that *Arpaio* teaches.") (emphasis altered); *id.* at 12 ("*Georgantas* is teaching an expensive non-standard material and an odious non-standard manufacturing process *to entirely avoid any abrasive smoothing* like *Arpaio* teaches.") (emphasis altered). These arguments are unpersuasive for two reasons. The first reason is that Georgantas describes the use of specially-formulated tempered glass as a "preferabl[e]" type of glass without criticizing, discrediting, or otherwise discouraging the use of *standard* tempered glass pieces in a gas fireplace. *See DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009):

> "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *Ricoh Co., Ltd. v. Quanta Computer Inc.*, 550 F.3d 1325, 1332 (Fed. Cir. 2008) (quoting *In re Kahn*, 441 F.3d 977, 990 (Fed. Cir. 2006)). A reference does not teach away, however, if it merely expresses a general preference for an alternative invention but does not "criticize, discredit, or otherwise discourage" investigation into the invention claimed. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

The second reason is that Patent Owner's above-quoted characterization of Georgantas's use of specially-formulated tempered glass as "avoid[ing] the

need to further process the broken fragments" (P.O. Br. 10) overlooks Georgantas's description of subjecting the pieces of specially-formulated tempered glass to further processing, including abrading and polishing. *See* Georgantas 2:38-43 ("The formed pieces of *the broken, tempered glass* may be washed and sifted to remove any debris, and *may be further abraded or polished* to form glass pieces without sharp edges, if needed . . . .") (emphasis added). Patent Owner has not addressed this teaching of abrading and polishing in Georgantas, despite the fact that the Examiner expressly relies on it in finding that "Georgantas suggests polishing tempered glass (Georgantas, col. 2, 11. 38-41)" (RAN 5) and presumably also relies on it when stating that "Georgantas discloses the need to abrade tempered glass and Jaunzemis discloses that fully tempered glass is well known." *Id.* at 15.

We therefore find that Georgantas does not teach away from replacing Georgantas's pieces of specially-formulated, tempered glass with standard tempered glass fragments (e.g., dice formed from standard fully tempered glass), which (like Georgantas's glass fragments) would be expected to have sharp edges that require smoothing in order to make the fragments safe to handle.

This brings us to Arpaio. Georgantas does not describe any particular apparatus for performing the above-discussed, optional abrading or polishing operation. We agree with the Examiner that Arpaio's apparatus would have been considered suitable for abrading or polishing pieces of standard tempered glass. RAN 5.

Arpaio's invention is a "Vibratory Tumbling Machine Vessel for Burnishing or Cleaning Metal, Plastic or Ceramic Elements."[15] Arpaio, title. Arpaio's tumbling machine vessel is a self-contained hollow sphere, preferably made from substantially abrasion-resistant plastic, that works in conjunction with typically any traditional vibratory tumbling machine. *Id.* at Abstract.

Figure 1A of Arpaio is reproduced below.

[15] The verb "burnish" is defined in relevant part at Dictionary.com as: "1. to polish (a surface) by friction," http://dictionary.reference.com/browse/burnish?s=t&path=/ (citing Random House Dictionary ©2013) (last visited August 16, 2013).

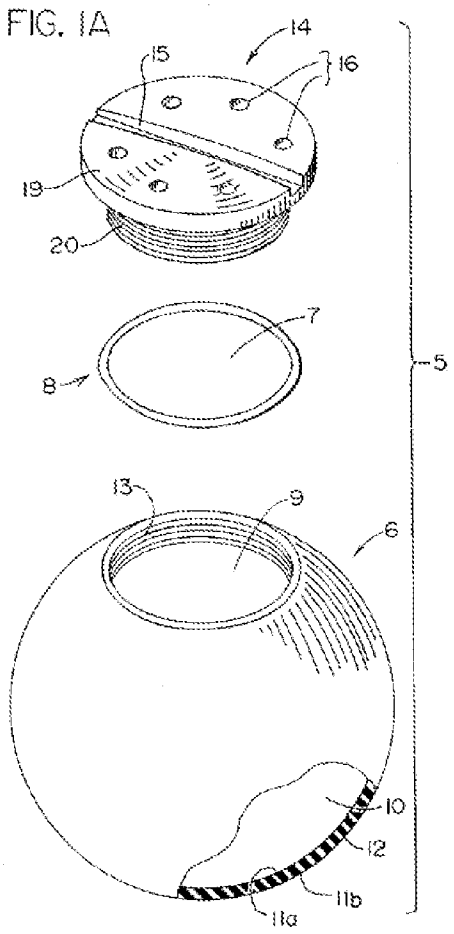

Figure 1A symbolically and diagrammatically illustrates, in exploded view, the combination of the spherical globe-forming structure 6, the perforated male closure member 14, and the intermediate O-ring 8, in a side perspective view. *Id.* at 11:20-24.

Arpaio describes the invention as addressing the following need:

> [T]he present inventor in his own business found need for a unit and/or combination unit for treatment(s) of diverse sizes and types of microsized lots of elements, in the *burnishing and/or polishing* thereof--also including one or more of *deburring,*

> *polishing and/or other surface preparation* of one or more of metal, plastic and/or *ceramic (such as glass, etc.)* elements and/or lots thereof.

Id. at 7:32-39 (emphasis added).[16] *See also id.* at Abstract ("Acc[]essory burnishing-treatment apparatus for treatment, namely deburring, turning corners, polishing or cleaning of elements, namely metal, plastic, or *ceramic* (typically *glass*) elements.") (emphasis added). Presumably based on these descriptions, the Examiner states that "Arpaio is known to already polish glass." RAN 5. Arpaio further explains that "a burnishing and/or cleansing composition(s) is/are jointly enclosed within the global inner space with the at-least one or more of the metal, plastic and ceramic elements." Arpaio 4:13-16.

Patent Owner does not deny that Arpaio's tumbling machine vessel performs an agitating function or that it is capable of polishing pieces of standard tempered glass. Instead, Patent Owner argues that Arpaio is nonanalogous art and also that Arpaio teaches away from the claimed invention. We begin by considering whether Arpaio is analogous art. Patent Owner contends that Arpaio is not analogous prior art under either prong of the following test for analogous art:

> "Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is

[16] The characteristics of ceramic glass are addressed below.

> reasonably pertinent to the particular problem with which the inventor is involved."

P.O. Br. 5 (quoting *In re Klein*, 647 F3d 1343, 1348 (Fed. Cir. 2011)). We find that Arpaio is analogous art under at least the second prong of this test. Patent Owner, when discussing the second prong, states that "[t]he problem the present inventors were considering was the problem 'of processing broken glass waste product into useful...pieces' (Ex. B, col. 1, 11.20-21 of the '360 patent)." P.O. Br. 8. We agree with this description of the problem facing the inventors. Patent Owner then argues:

> Arpaio would not have logically commended itself to one considering the inventors' problem because a reference (Arpaio) dealing with the *clean-up* of manufactured parts (by using added sub-chambers termed "spheres" placed into the bowl of a larger device) would not have logically commended itself to one considering the processing of broken glass waste product.

Id. (emphasis added). As support for this "clean-up" characterization, Patent Owner states:

> *Arpaio* lists "elements, namely metal, plastic, or ceramic (typically glass) elements." *See Abstract*. *Arpaio* also states that examples of elements intended to be "treated" by the Arpaio vessel, include the following:
>
> a) Machining and metal working field: stampings, forgins [sic], castings, turned parts, milled parts, ground parts, screw machined parts, formed parts, drawin [sic] parts, and gears;
>
> b) Types of Industries using parts that need vibration tumbling treatment: aircraft components, aerospace components, medical components, connectors industry,

> fastener, electrical industry, eyelet industry, bearings industry, pump components, hydraulics components, automotive components, optics industry, lazer [sic] industry components for any type of machinery and communications industry.
>
> Ex. B [Arpaio], col. 11, ll. 3-17.

P.O. Br. 6 (brackets in original).

Patent Owner's above-quoted description of Arpaio as "dealing with clean-up of manufactured parts" is unduly narrow for two reasons. The first is that the examples discussed in the above-quoted passage from Arpaio are described by Arpaio as "[t]ypical but not all-inclusive examples." Arpaio 11:3. The second reason is that Arpaio, after providing the following description of the deburring and polishing actions provided by the tumbling machine vessel, explains that it has broad applicability:

> While broadly the invention includes either smooth arcuate and/or curved surface(s) to the inner walls defining the inner space, and/or the multisided inside face--having a plurality of separate interconnected "flats" (such as a barrel type tumbler), that improvement achieves the lifting of the parts and media (inside the sphere's inner space) off of the bottom such as in the process of rotary barrel tumbling. This type of burnishing action is known as "slide zone action". At the same time, a constant frictional engagement of media and parts is taking place as well as a result of the vibratory action. The end result is a much more efficient and effective tumbling action that takes place for either the burnishing, deburring, or other types of surface preparation achieved in this type of fini[]shing process by the larger industrial units for conventional larger industrial vibratory tumbling machines aforestated.

> *By utilizing the present invention* in one or more variations and improvements thereof, *a real time saving is achievable for any manufacturing company involved in that t[y]pe of vibratory de-burring, polishing, etc., of the parts they either make for their customers and/or for themselves for use in their own product*.

Id. at 8:1-21 (emphasis added).

For the above reasons, a person skilled in the art would have recognized that Arpaio's tumbling machine vessel is suitable for polishing pieces of glass other than the ceramic glass specifically described. Arpaio is therefore analogous prior art under the second prong of the *Klein* test.

We next address Patent Owner's argument that Arpaio "teaches away" from treating tempered glass. Citing Hobbs, Stephanie, *Ceramic Glass VS Tempered Glass* (ver. 2, 2008) (Ex. G to P.O. Br.), Patent Owner states:

> Ceramic glass is a polycrystalline material produced through controlled crystallization of base glass. The result of this process is that ceramic glass has a higher thermal shock rating than tempered glass, at approximately 1400°F. (Ex. G, pg. 1, para[.] 3). The thermal shock rating is the temperature at which cracking occurs from the result of rapid temperature change. *Id.* Ceramic glass has nearly a zero expansion coefficient, resulting in very little to no expansion or contraction when heated or cooled. *Id.* As a result, ceramic glass does not need to be tempered in order to withstand the high temperatures of a fireplace. *Id.* In fact, because of the high thermal shock rating ceramic glass cannot be tempered, and as a none [*sic*; non-] tempered glass ceramic glass does not break into small fragments when broken, instead breaking into larger shards. *Id.* The result of this process is that ceramic glass does not break into fragments like standard tempered glass, instead ceramic glass breaks into

> larger shards, making ceramic glass unusable in the claimed process of the Jaunzemis '360 patent.
>
> Knowing the above, a person of ordinary skill in the art, upon reading *Arpaio* would be led to use, if anything, ceramic glass manufactured parts in the *Arpaio* apparatus. They would certainly not be led to use standard tempered glass because the ceramic glass disclosed in *Arpaio* does not need to be tempered, and indeed cannot be tempered, to be used in a high temperature environment. Hence, *Arpaio* teaches away from Applicants' invention because a person of ordinary skill in the art, upon reading *Arpaio* would be led in a direction divergent from the path that was taken by the Applicant.

P.O. Br. 9. This argument is unpersuasive because it overlooks Arpaio's above-noted description of the broad applicability of the tumbling machine vessel. While it is true that the only type of glass described by Arpaio is ceramic glass, a person skilled in the art would have recognized that Arpaio's tumbling machine vessel is suitable for polishing pieces of *any* type of glass that is capable of being polished by tumbling (with or without using Arpaio's optional burnishing compositions), including Georgantas's pieces of specially-formulated tempered glass and pieces of standard tempered glass (e.g., the dice formed by breaking standard fully tempered glass).

For the above reasons, we conclude that it would have been obvious to replace Georgantas's pieces of specially-formulated tempered glass with pieces of standard tempered glass (e.g., dice formed by breaking standard fully tempered glass) and to use Arpaio's tumbling (i.e., agitating) machine to polish the edges of the standard tempered glass pieces in order to make them

safe to handle. Consequently, we agree with the Examiner's conclusion that it would have been obvious to use Arpaio's tumbling machine vessel to polish the edges of pieces of standard tempered glass, which is all that is required by independent claims 1 and 15. For the above reasons, we also agree with the Examiner's conclusion (RAN 5) that it would have been obvious to "position[] the smoothed, tempered glass fragments in a space designated to contain fire," as required by claim 8. Patent Owner does not separately argue the additional limitations of claims 1, 8, and 15.

We therefore sustain the Examiner's conclusion that independent claims 1, 8, and 15 are unpatentable under 35 U.S.C. §103(a) based on (i) Arpaio in view of Georgantas, the Jaunzemis Declaration, and the ASTM Standard and also (ii) Arpaio in view of Georgantas, the Jaunzemis Declaration, and the Glazing Manual. We likewise sustain rejections on these grounds of dependent claims 2-7, 9-14, 16, and 17, which are not separately argued.

Because our reasoning supplements the Examiner's above-noted rationale, we hereby designate our affirmance of the Examiner's rejections as NEW GROUNDS OF REJECTION pursuant to 37 C.F.R. § 41.77(b).

PATENT OWNER'S OPTIONS FOR RESPONDING TO
THE DECISION AND NEW GROUNDS OF REJECTION

In addition to affirming the Examiner's rejections of one or more claims, this decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.77(b) which provides "[a]ny decision which includes a new ground of rejection pursuant to this paragraph shall not be considered final for judicial review." 37 C.F.R. § 41.77(b) also provides that the Patent Owner, WITHIN ONE MONTH FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

> (1) *Reopen prosecution*. The owner may file a response requesting reopening of prosecution before the examiner. . . .
>
> (2) *Request rehearing*. The owner may request that the proceeding be reheard under § 41.79 by the Board upon the same record. . . .

Any request to reopen prosecution before the examiner under 37 C.F.R. § 41.77(b)(1) shall be limited in scope to the "claims so rejected." Accordingly, a request to reopen prosecution is limited to issues raised by the new ground(s) of rejection entered by the Board. A request to reopen prosecution that includes issues other than those raised by the new ground(s) is unlikely to be granted. Furthermore, should the patent owner seek to substitute claims, there is a presumption that only one substitute claim would be needed to replace a cancelled claim.

A requester may file comments in reply to a patent owner response. 37 C.F.R. § 41.77(c). Requester comments under 37 C.F.R. § 41.77(c) shall be limited in scope to the issues raised by the Board's opinion reflecting its decision to reject the claims and the patent owner's response under paragraph 37 C.F.R. § 41.77(b)(1). A newly proposed rejection is not permitted as a matter of right. A newly proposed rejection may be appropriate if it is presented to address an amendment and/or new evidence properly submitted by the patent owner, and is presented with a brief explanation as to why the newly proposed rejection is now necessary and why it could not have been presented earlier.

Compliance with the page limits pursuant to 37 C.F.R. § 1.943(b), for all patent owner responses and requester comments, is required.

The Examiner, after the Board's entry of a patent owner response and requester comments, will issue a determination under 37 C.F.R. § 41.77(d) as to whether the Board's rejection is maintained or has been overcome. The proceeding will then be returned to the Board together with any comments and reply submitted by the owner and/or requester under 37 C.F.R. § 41.77(e) for reconsideration and issuance of a new decision by the Board as provided by 37 C.F.R. § 41.77(f).

III. DECISION

The Examiner's decision that claims 1-17 are unpatentable over the prior art is *affirmed*. Furthermore, these affirmed rejections are designated as new grounds of rejection pursuant to 37 C.F.R. § 41.77(b).

AFFIRMED; 37 C.F.R. § 41.77(b)

ak

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