

The opinion in support of the decision being entered today
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HARIKLIA DRIS REITZ, SUJEET KUMAR,
XIANGXIN BI, NOBUYUKI KAMBE, RONALD J. MOSSO,
and JAMES T. GARDNER

Appeal 2006-2776
Application 09/970,279
Technology Center 1700

Decided: June 14, 2007

Before BRADLEY R. GARRIS, CHUNG K. PAK, and
PETER F. KRATZ, *Administrative Patent Judges*.

KRATZ, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's refusal to allow claims 21-37, the only claims that remain pending in this application. Claims of the application have been at least twice rejected. We have jurisdiction pursuant to 35 U.S.C. § 6 (2006).

Appellants' claimed invention is directed to a reaction system including a reaction chamber with a plurality of reactant inlets arranged to combine reactants from different sources within the chamber such that the combined reactants are directed along a path. A light beam source is arranged for directing the beam at the combined reactants along the path. The disclosed reaction system is said to be useful for forming nanoscale phosphorescent particles, such as zinc oxide nanoparticles, via laser pyrolysis (Specification 2, 3, and 7). Claims 21, 25, 27, 32, and 35 are illustrative and reproduced below:

21. A reaction system comprising:

a reaction chamber;

a reactant delivery apparatus comprising a plurality of reactant inlets into the reaction chamber, wherein the plurality of reactant inlets are configured to combine within the reaction chamber different reactants from separate reactant sources along a combined reactant stream, such that the combined reactants are directed along a reactant path; and

a light source that is configured to direct a light beam at the combined reactants along the reactant path.

25. The reaction system of claim 21 wherein the reactant delivery apparatus comprises two aerosol delivery apparatuses oriented to combine two aerosol reactants along the reactant path within the reaction chamber.

27. The reaction system of claim 21 further comprising a shielding gas port oriented to direct a shielding gas to limit the spread of the combined reactants along the reactant path.

32. The reactant delivery system of claim 25 wherein at least one of the aerosol reactants comprises water.

35. The reactant delivery system of claim 21 wherein the plurality of reactant inlets is greater than two reactant inlets.

The Examiner relies on the following prior art references as evidence in rejecting the appealed claims:

Rice	US 4,548,798	Oct. 22, 1985
Lemelson	US 4,702,808	Oct. 27, 1987
Pratsinis	US 5,861,132	Jan. 19, 1999 ¹

Claims 21, 24, 28-31, 34, and 35 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Lemelson. Claims 36 and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lemelson. Claims 22, 23, 25, 26, 32, and 33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lemelson in view of Pratsinis. Claim 27 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Lemelson in view of Rice.

102(b) Rejection over Lemelson

Anticipation by a prior art reference does not require that the reference recognize either the inventive concept of the claimed subject matter or the inherent properties that may be possessed by the prior art reference. *See Verdegaal Bros. Inc. v. Union Oil Co.*, 814 F.2d 628, 633, 2 USPQ2d 1051, 1054 (Fed. Cir.), *cert. denied*, 484 U.S. 827 (1987). A prior art reference anticipates the subject matter of a claim when the

¹ Appellants do not dispute the availability of the subject matter of this patent as prior art to Appellants' appealed claims.

reference discloses every feature of the claimed invention, either explicitly or inherently (*see Hazani v. U.S. Int'l Trade Comm'n*, 126 F.3d 1473, 1477, 44 USPQ2d 1358, 1361 (Fed. Cir. 1997) and *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984)). Anticipation under this section is a factual determination. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 390, 21 USPQ2d 1281, 1283 (Fed. Cir. 1991) (citing *In re Bond*, 910 F.2d 831, 833, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990)).

Claims 21, 24, 29, 30, 31 and 34 are argued as a group.² Hence, we select claim 21 as the representative claim for this claim grouping.

In the case before us, the Examiner has reasonably determined that Lemelson describes structure which representative claim 21 reads on (*see Answer* 4 and 7-8). The Examiner points to drawing Figures 1 and 11 of Lemelson and portions of the patent specification description relating thereto in asserting the anticipation grounds of rejection. *Id.*

² In the Reply Brief filed March 31, 2006, Appellants withdrew an earlier request for separate consideration of claim 31 made in the Supplemental Brief filed November 14, 2005, which is hereinafter referred to as the Brief. A copy of the claims on appeal, sections identifying the Real Party in Interest, Related Appeals and Interferences, Status of Claims and Amendments, and Summary of Claimed Subject Matter can be found in an April 18, 2005 Appeal Brief, submitted before reopening of prosecution by the Examiner. The April 18, 2005 Appeal Brief, incorporated by reference in the current Brief, addressed different rejections than those before us now.

Figure 11 of Lemelson is a side view of one form of the reaction apparatus, including control means, and is reproduced below.

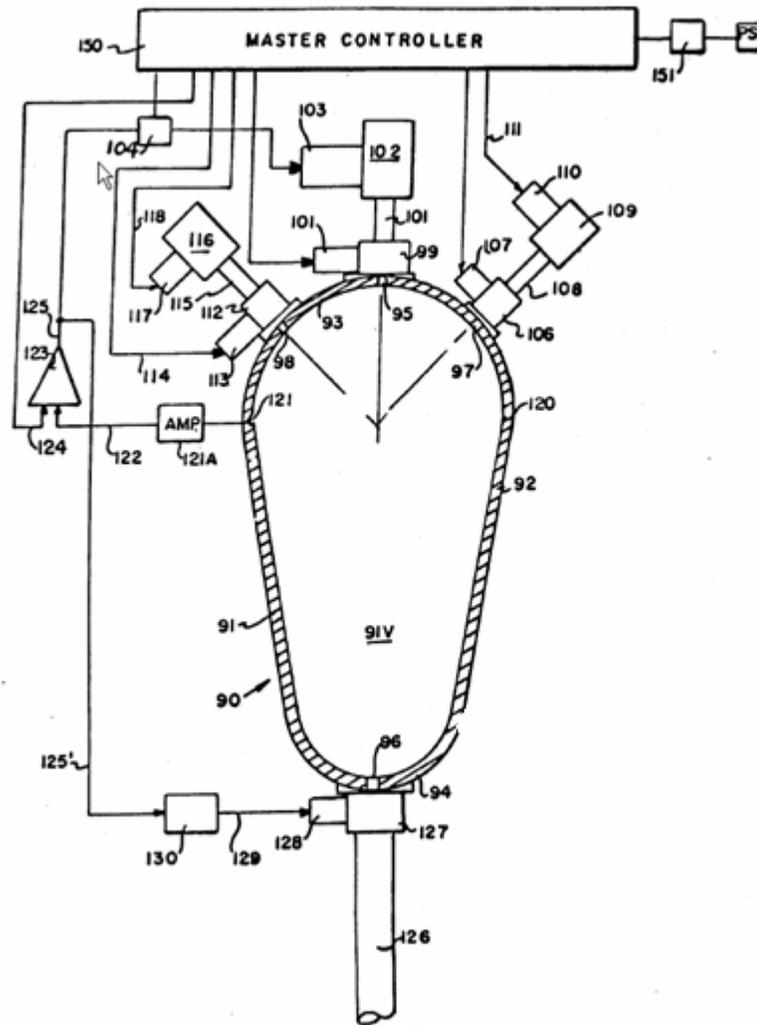


FIG. 11

Figure 11 shows that the reaction chamber (91) is elongated and includes, *inter alia*, reactant inlets (97) and (98), a radiation or laser beam inlet (95) and an outlet (96). Lemelson discloses, in part, that:

In Fig. 11, a single continuous or intermittently generated laser, electron or molecular beam passed through opening **95** in the wall of chamber **91**, may be controlled and directed to intersect one or more of the streams of matter introduced through the openings **97** and **98** in the chamber wall for predeterminedly reacting thereon and creating physical and/or chemical changes in the molecules or particles defining such streams [sic, streams] of matter. Such streams of matter may be in gaseous, vaporous, plasma, or solid particle form or combinations of same. The two streams may be formed of the same matter or combinations of matter or different matter and caused to chemically react or combine, such as in alloying, at or beyond the location where they intersect and/or are reacted on by the beam or beams of radiation directed thereagainst. In other words, two or more streams of matter may be caused to intersect within the chamber **91** and react when they intersect as the molecules or particles thereof are heated or irradiated by two [or more] beams of intense radiation of the type described, whereafter the products of such reaction or reactions that occur in the chamber are continuously or intermittently removed from the chamber as described. The entire continuous or intermittent flow of fluid(s) or particles and operationn [sic] of one or more radiation beam generators is controlled automatically by a single master controller or computer **150** as described.

Lemelson col. 15, ll. 19-46.

Appellants do not contend that Lemelson does not describe a reaction system including structure including a reaction chamber, a reactant delivery apparatus comprising a plurality of inlets, and a light source, such as the systems that drawing Figures 1 and 11 of Lemelson depict, including the respective reaction chambers (11 and 91), inlets (13, 13', 97, and 98), and light sources (17, 18, 19, 102) thereof. Rather, Appellants' contentions here are with regard to particular details of their system that the claims at issue are argued to allegedly require and which details the Examiner allegedly

erred in failing to take into account, and/or with respect to which the Examiner allegedly misinterprets the applied prior art. It is asserted in the Brief that:

Appellants' claim 21 specifies that "a light source is configured to direct a light beam at the combined reactants along the reactant path." In contrast, the Lemelson patent teaches the plurality of reactant inlets (13 and 13' in Fig. 1 and 97 and 98 in Fig. 11) directed at opposite sides of the light beam (17', 18' and 19' in Fig. 1 and 95 in Fig. 11). Thus, in the Lemelson patent, the reactants do not combine along a reactant path **before** interacting with the light beam. To accomplish this, the plurality of reactant inlets would have to be on the same side of the light beam and **NOT** on opposite sides of the light beam. Since this feature is not taught by the Lemelson patent, the Lemelson patent clearly does not *prima facie* anticipate Appellants' claimed invention.

Br. 3.

Consequently, the issues before us with respect to the Examiner's anticipation rejection are: (1) whether Appellants have identified reversible error in the Examiner's anticipation rejection based on the assertion that Lemelson fails to describe structure corresponding to a representative claim 21 requirement for a reaction system with a light source configuration relative to the recited reactant delivery apparatus and reaction chamber such that the light beam emitted from that light source could not interact with reactants along a reactant path before the reactants are combined; and (2) whether Appellants have otherwise identified reversible error in the Examiner's rejection of representative claim 21 and/or in the rejection of other separately argued claims in their Brief or Reply Brief? We answer

these questions in the negative and affirm the Examiner's anticipation rejection for the reasons set forth in the Answer as further explained below.

Representative claim 21 is not as limited as Appellants' contentions and arguments would seem to suggest. Representative claim 21 does not require reactant inlets and a light source configured such that reactants from separate inlets are intersected and combined prior to the combined reactants being intersected by a beam from a light source, as argued by Appellants. Rather, all that is required respecting the light source configuration relative to the reactant path and reactants is "a light source that is configured to direct a light beam at the combined reactants along the reactant path" (see Appealed claim 21). After all, it is axiomatic that, in proceedings before the PTO, claims in an application are to be given their broadest reasonable interpretation consistent with the specification, and that claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Sneed*, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983). However, limitations are not to be read into the claims from the specification. *In re Van Geuns*, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993) *citing In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

Here, the claimed arrangement is open to having the light source configured to direct a light beam in other ways than seemingly argued by Appellants (Reply Br. 2-4). For example, representative claim 21 encompasses arrangements wherein the light source is configured such that the beam intersects separately introduced reactants both before and after they are combined along a reactant path, and/or such that the beam intersects reactants at the very point along the reactant path where separately

introduced reactants are combined. Appellants, in their Briefs, do not point to any claim term definition in their Specification that warrants reading claim 21 with as narrow a scope, with respect to the light source configuration, as argued for. It is well established that embodiments appearing in the specification will not be read into the claims. *See Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 866-867, 228 USPQ 90, 93 (Fed. Cir. 1985), *overruled on other grounds by Nobelpharma AB v. Implant Innovations, Inc.*, 141 F.3d 1059, 46 USPQ 2d 1097 (Fed. Cir. 1998).

As another point, it is Appellants' interpretation of Lemelson, along with the subject matter required by representative claim 21, not the Examiner's interpretation thereof, which is in error. For example, Appellants state that:

First, the Examiner points to column 15, lines 29-34 of the Lemelson patent for the statement that "The two streams may be formed of the same matter or combinations of matter or different matter and caused to chemically react or combine, such as in alloying, at or beyond the location where they intersect and/or are reacted on by the beam or beams of radiation directed thereagainst." This sentence does **not** teach or suggest the combination of two or more matter streams prior to intersecting with a laser beam. However, this sentence discusses **the reaction taking place** at or beyond where the beam and reactants intersect. **This sentence says nothing about the relative position of the intersecting of the radiation beam and the combination of the reactant streams.** It only discusses where the reaction takes place. The Examiner's reading of this sentence is a **clear error of fact** since it simply does not state what the Examiner asserts that it states.

Reply Br. 3.

This line of argument is unpersuasive for at least two reasons: (1) As we determined above, representative claim 21 is not limited to a reaction system arrangement which would only permit a method of operation wherein two or more matter streams are intersected prior to the intersection of a laser beam therewith; and (2) the Examiner's factual determination that Lemelson describes a system wherein two or more matter streams can be combined or intersected prior to intersecting them with a radiation beam (laser) at column 15, lines 19-46, particularly lines 29-34 and col. 1, lines 41-48 is found to be reasonable and supported by a fair reading of the Lemelson patent, as a whole. In this regard, Lemelson is not limited to the specifically depicted embodiments of the drawing figures. Lemelson describes an embodiment that would be embraced by representative claim 21, even if representative claim 21 had been narrowed by an amendment to conform to the arguments presented by appellants. For example, the disclosures at column 2, lines 57-62, column 16, lines 58-63 and claim 4 of the Lemelson patent lend support to the Examiner's interpretation of Lemelson as being descriptive of a system wherein a radiation (laser) beam intersects the reactants after their combination.

Thus, the argued for, but unclaimed, supposed distinction in light source configuration between the subject matter of claim 21 and the reaction system light source arrangement described by Lemelson is not persuasive of reversible error in the Examiner's anticipation rejection.

Concerning rejected dependent claims 28 and 35, Appellants furnish additional separate arguments. Appellants maintain that Lemelson does not describe a system for combining three reactants along a reactant path (claim 28) or a system wherein the number of reactant inlets is greater than two, as

required by claim 35. These arguments are not persuasive for reasons stated by the Examiner in the Answer (p. 8) and as disclosed by Lemelson (col. 2, ll. 57-62; col. 4, ll. 56-68; and col. 15, ll. 34-41). We find that Lemelson's disclosure of "two or more streams of matter" that intersect and react in the system thereof is a description of a reaction system for combining three reactants as recited in claim 28 and a description of a reaction system including more than two inlets as required by claim 35 (*see* Lemelson; col. 15, ll. 34-41). We note that claim 28 is not limited to a system wherein the three reactants are combined along the reaction path before being intersected by a light beam (Reply Br. 5). Appellants cannot establish patentability for their claimed system on the basis of features that do not appear in the rejected claims. *See In re Self*, 671 F.2d 1344, 1348, 213 USPQ 1, 5 (CCPA 1982).

On this record, Appellants have not established reversible error in the Examiner's anticipation rejection. It follows that we shall sustain the Examiner's § 102(b) rejection over Lemelson.

§ 103(a) Rejections

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary consideration. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). "[A]nalysis [of whether the subject matter of a claim is obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative

steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. Teleflex, Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007) quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1396 (Fed. Cir. 2006); see also *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1361, 80 USPQ2d 1641, 1645 (Fed. Cir. 2006)(“The motivation need not be found in the references sought to be combined, but may be found in any number of sources, including common knowledge, the prior art as a whole, or the nature of the problem itself.”). The analysis supporting obviousness, however, should be made explicit and should “identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements” in the manner claimed. *KSR*, 127 S. Ct. at 1732, 82 USPQ2d at 1389.

Rejection of Claims 36 and 37

Concerning the Examiner’s obviousness rejection of dependent claims 36 and 37 over Lemelson, Appellants argue the claims as a group. Thus, we select claim 36 as the representative claim for this ground of rejection. The Examiner has determined that the reaction system embraced by representative claim 36 differs, if at all, from Lemelson’s explicit disclosure by specifying a particular reactant inlet configuration (Answer 4). In this regard, claim 36 requires a reactant inlet configuration capable of forming a “combined reactant stream with a cross section perpendicular to the reactant path that is elongated in one dimension relative to the perpendicular direction” (appealed claim 36).

The Examiner has found that Lemelson discloses or suggests a reaction system including a reactant delivery system comprising a plurality

of inlets to an elongated reaction chamber reaction path wherein reactants from the inlets intersect (Answer 4 and 9; Lemelson, Fig.'s 1 and 11; col. 15, ll. 19-46). Lemelson discloses an elongated reaction path (col. 14, ll. 5-12). To the extent it is argued that representative claim 36 requires a patentable difference in shape of the reaction path or a non-obvious difference in the reactant inlet configuration over that disclosed by Lemelson, the Examiner's position seems to be that no such difference is required by the claim language. Lemelson is provided as evidence of the skill in the art. Hence, the Examiner has determined that it would have been obvious to one of ordinary skill in the art to form the reaction system of Lemelson with a plurality of reaction inlets as disclosed therein with the result of a configuration of inlets and a predictable combined reactant stream formed, as here being claimed.

Appellants, on the other hand, contend that Lemelson does not teach or suggest elongated reaction inlets or their orientation in the Brief (Br. 5). Then, in the reply brief, Appellants maintain that "claims 36 and 37 are directed to a reactant flow that is elongated with respect to its cross-section **perpendicular** to its flow. The path from the inlet to the outlet is **along** the flow and **not perpendicular** to the flow" (Reply Br. 6).

Have Appellants demonstrated reversible error in the Examiner's obviousness rejection of representative claim 36 based on their contentions set forth in the Brief and Reply Brief? We answer this question in the negative. We affirm the Examiner's obviousness rejection of claims 36 and 37. Our reasoning follows.

At the outset, we note that representative claim 36 does not require any particular elongation with respect to the reaction inlets, as argued in the

Brief. Nor does representative claim 36 specifically define whether it is the reactant path that is elongated in one dimension relative to the perpendicular direction or whether it is the cross-section of the reaction stream that is elongated in one dimension relative to the perpendicular direction. The Examiner asserts the former in the Answer. Appellants assert the latter in the Reply Brief. Appellants' disclosed invention appears to broadly encompass both (Specification 2-3, Fig. 2).

In light of the above, we determine that representative claim 36, given its broadest reasonable construction as it would be understood by one of ordinary skill in the art, encompasses both the Examiner's and Appellants' asserted claim interpretations. It follows that Appellants have not established reversible error in the Examiner's obviousness position. We hasten to add that regardless of which feature the claim term "elongated" is applied to, representative claim 36 broadly encompasses any extent of such elongation, including a trivial or insignificant elongation in one dimension. Hence, on this record, we sustain the Examiner's obviousness rejection of claims 36 and 37 over Lemelson.

Rejection of Claim 27

Concerning the Examiner's obviousness rejection of dependent claim 27, the Examiner turns to Rice for a teaching of the use of a shielding gas port in a laser beam supplied reactor (Answer 6; Rice, col. 4, ll. 34-36). The examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to have employed a shielding gas port in Lemelson's reaction system, given the teachings of Rice and with the expected result of limiting combined reactant stream spread.

In addition to arguments made for the patentability of independent claim 21, Appellants contend that there is a lack of motivation for combining the teachings of Rice and Lemelson (Br. 8 and Reply Br. 8-9). Appellants assert that Lemelson teaches away from such a modification as Lemelson generally desires unrestrained flow of the reactants (Br. 9).

The additional issue before us with respect to the rejection of claim 27 is: Have Appellants' assertions of a lack of motivation and a teaching away established reversible error in the Examiner's obviousness rejection of claim 27?

We answer this question in the negative and affirm the Examiner's obviousness rejection of claim 27.

In particular, we note that Rice discloses the use of shielding gas ports. Providing Lemelson's apparatus with such ports is attended by expected advantages, including: (1) the use of such inlet ports near viewing windows in the reaction apparatus prevents deposition of particulates thereon (col. 3, ll. 62-68); and (2) the use of such inlet ports can be used in a manner to minimize "spreading and turbulence of the reactant gas stream in the reaction zone" (col. 4, ll. 33-36 and 45-63). Thus, one of ordinary skill in the art would have been led to provide a shielding gas inlet port in Lemelson with the reasonable expectation that either one or both of those advantages as discussed by Rice could be predictably obtained for the system of Lemelson.

As to the specific question of "teaching away," our reviewing court in *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994) stated:

A reference may be said to teach away when a person of ordinary skill, upon [examining] 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.

Here, Lemelson does not serve to teach away from the provision of a shielding gas port as argued. The inlet reactant flows in Lemelson are taught as being generally directed toward each other and then the combined flows are directed toward an exhaust opening (col. 11, l. 61-col. 12, l. 17 and Fig. 11). Thus, Appellants' argument to the contrary is not persuasive (Br. 9). Moreover, we have no doubt that Lemelson would be concerned with preventing reactant materials from depositing on any viewing or laser openings provided in the reaction apparatus as taught by Rice to be a benefit in providing shielding gas inlet ports. Indeed, Lemelson teaches the use of shielding gas inlets to shield the beam from the surrounding atmosphere and for cooling purposes (col. 8, l. 55 - col. 9, l. 49). Concerning Appellants' argument in the Reply Brief to the effect that the figures 8 and 9 embodiments of Lemelson have nothing to do with combining reaction streams, we note that Lemelson teaches that the beam and fluid flow arrangements of Figures 7-10 can be applied to any of the apparatuses described in Lemelson used for reacting solids, liquids, or gases (col. 9, ll. 43-49).

Thus, we find that the applied references furnish facts which, on balance, support the Examiner's obviousness contention regarding the proposed modification of Lemelson. Lemelson does not serve as a teaching away from the claimed subject matter as Appellants maintain. In this regard,

we find no discouragement with respect to using a shielding gas port in Lemelson.

Thus, we affirm the Examiner's obviousness rejection of claim 27 as unpatentable over Lemelson in view of Rice.

Rejection of Claims 22, 23, 25, 26, 32, and 33

Finally, we turn to the Examiner's obviousness rejection of claims 22, 23, 25, 26, 32, and 33 over Lemelson in view of Pratsinis.

We note that Appellants make the same arguments for claims 25 and 26 (Group 2) as they make for claims 22 and 23 (Group 2). Br. 6-7. Thus, we consider these claims together and select claim 25 as the representative claim.

Representative claim 25 depends from claim 21 and further requires that the reactant delivery apparatus comprises two aerosol delivery apparatuses oriented to combine these reactant streams along the reaction chamber reaction path. The Examiner notes that the provision that the reactant delivery apparatus is an aerosol delivery apparatus represents a possible difference over the disclosure of Lemelson. In this regard, as we noted above, Lemelson describes the delivery of fluent chemicals via the reactant inlets thereof including gaseous, liquid, vaporous or plasma state reactants, as well as particulates. *See* Lemelson at col. 1, ll. 37-56, col. 4, ll. 63-68, and col. 11, l. 61-col. 12, l. 6. The Examiner refers to Pratsinis for a teaching of apparatus for introducing a fluent material into the vapor phase via aerosolization (aerosol delivery apparatus). *See* Pratinis, col. 4, ll. 49-52. The Examiner asserts that it would have been obvious to one of ordinary skill in the art to employ aerosol delivery apparatus as the reactant delivery

apparatus of Lemelson because the selection of alternative or “known equivalent devices for introducing fluent material into vapor material would have been within the level of ordinary skill in the art” (Answer 6).

In addition to arguments made against the Examiner’s rejection of independent claim 21, Appellants additionally contend with respect to these dependent claims that Pratsinis does not teach the provision of an aerosol reactant and that the combination of Lemelson and Pratsinis does not render the claimed subject matter of these dependent claims, including representative claim 25, prima facie obvious (Br. 6-7). Moreover, with respect to dependent claims 32 and 33, Appellants contend that these latter claims relate to particular reactants stored by the reaction system and that the applied references do not render such an apparatus prima facie obvious (Br. 7).

The additional issues raised in this appeal with respect to representative claim 25 are: Have Appellants demonstrated reversible error in the Examiner’s obviousness rejection by their assertion that neither of the applied patents teach or suggest the provision of aerosol flows that are combined within a reaction chamber? With regard to claims 32 and 33, the additional issue is: Have Appellants demonstrated reversible error in the Examiner’s obviousness rejection by asserting that the applied references do not teach or suggest the additional apparatus features required by these claims. We answer these questions in the negative and affirm the examiner’s obviousness rejection of claims 22, 23, 25, 26, 32, and 33 over Lemelson in view of Pratsinis.

Considering representative claim 25, we again note that Lemelson teaches the provision of reaction apparatus including two inlets for liquid,

gaseous, vaporous or particulate reactants that are oriented to combine the reactants within a reaction chamber (Fig. 11; col. 15, ll. 19-46). Thus, Lemelson generally provides that the reactants to be combined are in a fluent condition (col. 1, ll. 37-41). Notwithstanding Appellants' contentions, we cannot say that the apparatus for supplying an aerosol form of reactants (a suspension of liquid or solid particles in a gas) of representative claim 25 structurally distinguishes over the reaction system including the fluent material supply system disclosed and suggested by Lemelson with or without the additional teachings of Pratsinis. Moreover, even if we could agree with Appellants that the reactants were a part of the system being claimed here, which we do not, aerosols are rather commonplace and known (Reply Br. 9). One of ordinary skill in the art is presumed to have some skill in furnishing the fluent particulate and liquid reactants that Lemelson describes, including the provision of these reactants in an aerosol form. In this regard, we note that Pratsinis clearly describes aerosols in the Background of the Invention section of the patent and Patentee clearly indicates that vapors formed via aerosolization are contemplated as a way of furnishing a reactant (col. 4, ll. 49-55). On this record, Appellants have not persuaded us of any patentably distinct requirement called for in the system of representative claim 25 that is not taught or suggested to one of ordinary skill in the art by the applied references.

As for separately argued dependent claims 32 and 33, we agree with the Examiner, as we indicated above, that the aerosol reactants are not part of the claimed apparatus system and are entitled to little, if any patentable weight. Appellants assertion that the reactants are required to be stored as part of the apparatus (Br. 7) is untenable in that no filled bottles or other

storage devices are specified in claims 32 or 33. Moreover, Appellants broadly worded arguments to the effect that the particular reactants specified in claims 32 and 33 can be afforded patentable weight rendering these claims patentable over the applied references hardly explains why this is so. Appellants have not explained why Lemelson's reaction apparatus is not capable of being used with common aerosol materials. In this regard, Appellants do not say that steam and/or isopropyl alcohol are newly discovered reactable materials. Certainly, Lemelson does not limit the disclosed system for use in carrying out a particular reaction. Indeed, "Appellants do not assert to have invented aerosol as a reactant within a flowing reactor" (Reply Br. 8). Thus, we agree with the Examiner that the applied references make out a prima facie case of obviousness for the claimed subject matter, which has not been persuasively refuted by Appellants.

As another point, we note that no unexpected or unpredictable results are alleged for the claimed subject matter.

It follows, that upon reconsideration of the question of the obviousness of the claimed subject matter in light of the evidence of record and contentions made for and against a determination of obviousness, it is our view that, on balance, the evidence tilts in favor of an obviousness determination. Consequently, we affirm the Examiner's obviousness rejection of claims 22, 23, 25, 26, 32, and 33 over Lemelson taken with Pratsinis.

CONCLUSION

The decision of the Examiner to reject claims 21, 24, 28-31, 34 and 35 under 35 U.S.C. § 102(b) as being anticipated by Lemelson; to reject claims 36 and 37 under 35 U.S.C. § 103(a) as being unpatentable over Lemelson; to reject claims 22, 23, 25, 26, 32, and 33 under 35 U.S.C. § 103(a) as being unpatentable over Lemelson in view of Pratsinis; and to reject claim 27 under 35 U.S.C. § 103(a) as being unpatentable over Lemelson in view Rice is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (2006).

AFFIRMED

clj

Dardi & Associates, PLLC
220 S. 6th St.
Suite 2000, U.S. Bank Plaza
Minneapolis, MN 55402