

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES R. MORAN
and FRANCIS G. GERBERICH

Appeal 2008-0500
Application 11/017,525
Technology Center 1700

Decided: July 29, 2008

Before BRADLEY R. GARRIS, ADRIENE LEPIANE HANLON, and
CAROL A. SPIEGEL, *Administrative Patent Judges*.

HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134 from an Examiner's final rejection of claims 1-3 and 8-14, all of the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b). We AFFIRM.

Appeal 2008-0500
Application 11/017,525

The Examiner finally rejected claim 8 under 35 U.S.C. § 102(b) as being anticipated by Chaussade 755.¹ Final 2.²

The Examiner finally rejected claims 1-3 and 8-14 under 35 U.S.C. § 103(a) as being unpatentable over the combined teachings of Chaussade 755, Chaussade 089,³ Shaffer,⁴ and Ehrhart.⁵ Final 2.

B. ISSUES

Whether the Appellants have shown that the Examiner reversibly erred in rejecting claim 8 under 35 U.S.C. § 102(b) as being anticipated by Chaussade 755.

Whether the Appellants have shown that the Examiner reversibly erred in rejecting claims 1-3 and 8-14 under 35 U.S.C. § 103(a) as being unpatentable over the combined teachings of Chaussade 755, Chaussade 089, Shaffer, and Ehrhart.

C. FINDINGS OF FACT

The following findings of fact are believed to be supported by a preponderance of the evidence. Additional findings of fact as necessary appear in the Analysis portion of the opinion.

1. Subject matter on appeal

The subject matter on appeal relates to a composite interlayer suitable for use in laminated glass. In a preferred embodiment, the composite

¹ US 5,766,755 issued to Chaussade et al. on June 16, 1998 (“Chaussade 755”).

² Final Office Action mailed September 13, 2006.

³ US 5,763,089 issued to Chaussade et al. on June 9, 1998 (“Chaussade 089”).

⁴ US 4,121,014 issued to Shaffer on October 17, 1978 (“Shaffer”).

⁵ US 4,436,784 issued to Ehrhart on March 13, 1984 (“Ehrhart”).

includes a layer of plasticized polyvinyl butyral (PVB) sandwiched between second and third polyurethane layers. Spec. 5:17-24.

Claims 1 and 8, the only independent claims on appeal, read as follows:

1. A glass laminate comprising:
 - a first layer comprising a plasticized polyvinyl butyral and having a top surface and a bottom surface;
 - a first polyurethane layer adjacent said top surface of said first layer; and,
 - a second polyurethane layer adjacent said bottom surface of said first layer;
 - wherein at least one of said first and second polyurethane layers comprises polyurethane having a thickness of less than 5 mils for lamination to a rigid glass substrate; a first glass layer adjacent said second polyurethane layer; and a second glass layer adjacent said first polyurethane layer.
8. A glass laminate, consisting essentially of:
 - a first layer comprising a plasticized polyvinyl butyral and having a top surface and a bottom surface;
 - a first polyurethane layer adjacent said top surface of said first layer;
 - a second polyurethane layer adjacent said bottom surface of said first layer;
 - a first glass layer adjacent said second polyurethane layer; and,
 - a second glass layer adjacent said first polyurethane layer.

App. Br.,⁶ Claims Appendix.

⁶ Appeal Brief dated December 8, 2006.

2. Chaussade 755

Chaussade 755 discloses a laminated safety pane for aircraft, notably a windscreen or lateral glazing pane for a pressurized cockpit. Chaussade 755, at 1:7-9.

Chaussade 755 Figure 1 illustrates an embodiment of the invention. Chaussade 755, at 1:66-67. Chaussade 755 Figure 1 is reproduced below:

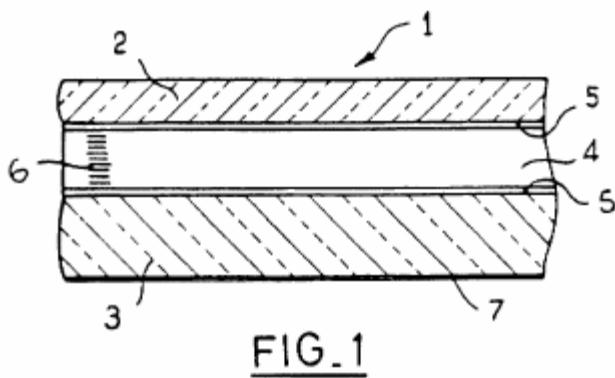


Figure 1 depicts a laminated safety pane.

Glazing pane **1** is composed of an outer glass sheet **2** and an inner glass sheet **3**. An intermediate layer **4** composed of seven sheets or plies is disposed between glass sheets **2** and **3**. The two outermost plies **5**, in contact with the glass sheets, each have a thickness of 0.76 mm (~30 mils) and are composed of plasticized PVB. In a variant, the two outermost plies **5** may be formed of thermoplastic polyurethane. The five inner plies **6**, each having a thickness of 0.5 mm (~20 mils), are formed of PVB. Chaussade 755, at 4:54-67.

According to Chaussade 755, the laminated glazing pane is assembled by stacking the constituent elements followed by a conventional autoclave cycle. Chaussade 755, at 5:21-24.

3. Chaussade 089

Chaussade 089 discloses a composite safety glass pane having penetration resistance and anti-laceration properties that are retained in widely varying conditions of temperature and humidity. Chaussade 089 discloses that the pane is suitable for use as a safety glass for transportation vehicles. Chaussade 089, at 1:6-11.

The safety glass comprises a glass substrate, a complex sheet containing a layer of PVB, a film of polyester, preferably polyethylene terephthalate (PET), and a scratch-resistant and abrasion-resistant outer coating. A supplementary adhesive film of thermoplastic polyurethane is incorporated between the glass sheet and the layer of PVB. Chaussade 089, at 1:54-63.

Chaussade 089 discloses that the addition of a polyurethane film enables good bonding of the complex sheet with the glass substrate, via the intermediate PVB layer, in widely varying conditions of temperature and humidity. Chaussade 089, at 2:4-7.

Chaussade 089 discloses that the thickness of the polyurethane film ranges from 0.1 mm (~4 mils) to 3 mm (~118 mils).⁷ Chaussade 089, at 2:38-42.

⁷ The Examiner also relies on Shaffer to establish that polyurethane layers less than 5 mils thick were known to be used in laminates. Examiner's Answer mailed March 23, 2007 ("Ans"), at 4. Therefore, as to the thickness of the claimed polyurethane layers, we find the teachings of Shaffer to be cumulative of the teachings of Chaussade 089.

D. PRINCIPLES OF LAW

“During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow.” *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989).

The phrase “consisting essentially of” limits the scope of a claim to the specified ingredients and those that do not materially affect the basic and novel characteristics of the claimed subject matter. *In re Herz*, 537 F.2d 549, 551-52 (CCPA 1976). On the other hand, the term “comprises” permits the inclusion of unrecited steps, elements, or materials. *In re Baxter*, 656 F.2d 679, 686 (CCPA 1981).

“To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently.” *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997).

Furthermore, a claimed invention is not patentable if the subject matter of the invention would have been obvious to a person having ordinary skill in the art at the time the invention was made. 35 U.S.C. § 103(a); *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 13 (1966).

Facts relevant to a determination of obviousness include (1) the scope and content of the prior art, (2) any differences between the claimed invention and the prior art, (3) the level of skill in the art, and (4) any relevant objective evidence of obviousness or non-obviousness. *KSR*, 127 S. Ct. at 1734; *Graham*, 383 U.S. at 17-18.

A person of ordinary skill is also a person of ordinary creativity, not an automaton. *KSR*, 127 S. Ct. at 1742. One of ordinary skill in the art is

presumed to have skills apart from what the prior art references expressly disclose. *In re Sovish*, 769 F.2d 738, 742 (Fed. Cir. 1985).

Where a rejection is based on a combination of references, one cannot show non-obviousness by attacking the references individually. *In re Keller*, 642 F.2d 413, 426 (CCPA 1981).

The question under 35 U.S.C. § 103 is not merely what the references teach but what they would have suggested to one of ordinary skill in the art at the time the invention was made. All disclosures of the prior art, including unpreferred embodiments, must be considered. *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976).

E. ANALYSIS

1. Claim construction

At issue in this appeal is the meaning of the term “layer” in the phrase “a first layer comprising a plasticized polyvinyl butyral [PVB]” recited in claims 1 and 8. The Appellants do not expressly define the term “layer” in the Specification. Therefore, we turn to the extrinsic evidence of record.

Chaussade 755 discloses a glass laminate comprising “an intermediate layer 4 composed of 7 sheets or plies.” These seven sheets or plies may be composed of PVB. Chaussade 4:54-67.

We find that Chaussade 755 is evidence that in the glass laminate art a “layer” may be composed of several sheets or plies of the same material, e.g., PVB. *See Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (court is not barred from considering any particular sources to conduct claim construction as long as those sources are not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence.).

Furthermore, claims 1 and 8 do not exclude a layer comprised of more than one sheet or ply of a material.

Based on the record before us, we interpret the phrase “a first layer comprising a plasticized polyvinyl butyral [PVB]” to mean a layer comprising one or more sheets or plies of PVB. *Zletz*, 893 F.2d at 321.

2. Rejection under 35 U.S.C. § 102(b)

The Examiner found that Chaussade 755 discloses a glass laminate comprising two glass sheets bonded with an intermediate layer composed of seven sheets or plies of plasticized PVB. In one embodiment, the Examiner found that the two outermost sheets of the intermediate layer are formed of thermoplastic polyurethane and the five inner sheets are formed of plasticized PVB. The Examiner found that this embodiment of the invention disclosed in Chaussade 755 anticipates the subject matter of claim 8. Ans. 3⁸.

The Appellants argue that Chaussade 755 does not disclose a layer of PVB flanked by two polyurethane layers but rather describes a glass laminate comprising five layers of PVB flanked by two polyurethane layers. App. Br. 4-5.

The glass laminate disclosed in Chaussade 755 comprises five sheets or plies of plasticized PVB sandwiched between two sheets or plies of polyurethane. Chaussade 755, at 4:54-67. Based on our interpretation of the phrase “a first layer comprising a plasticized polyvinyl butyral [PVB]” discussed above, we find that the five sheets or plies of plasticized PVB define a layer of PVB within the scope of claim 8. Thus, we find that Chaussade 755 anticipates the subject matter of claim 8.

⁸ Examiner’s Answer mailed March 23, 2007.

There has been some discussion between the Examiner and the Appellants as to whether the sheets or plies of PVB in Chaussade 755 are fused together during the autoclave cycle described therein. *See, e.g.*, Ans. 5-6; Reply Br. 4.⁹ It is not necessary to resolve this issue since we find that Chaussade 755 expressly describes a PVB layer within the scope of claim 8.¹⁰

3. Rejection under 35 U.S.C. § 103(a)

The Examiner found that the glass laminate disclosed in Chaussade 755 comprises five plies of PVB sandwiched between two plies of polyurethane. Ans. 3. Again, the Appellants argue that Chaussade 755 does not disclose a layer of PVB flanked by two polyurethane layers. App. Br. 9.

Based on our interpretation of the phrase “a first layer comprising a plasticized polyvinyl butyral [PVB]” discussed above, we find that the five sheets or plies of plasticized PVB described in Chaussade 755 define a layer of PVB within the scope of claims 1 and 8.

Next, claims 1 and 9 recite that at least one of the first and second polyurethane layers has a thickness of “less than 5 mils.” Claims 2 and 10 recite that the first and second polyurethane layers each have a thickness of “less than 5 mils.” App. Br., Claims Appendix.

The Examiner found that the first and second polyurethane layers of the glass laminate disclosed in Chaussade 755 are thicker than 5 mils. Ans.

⁹ Reply Brief dated May 23, 2007.

¹⁰ We note that Chaussade 755 discloses that assembly of the laminate is followed by a conventional autoclave cycle. Chaussade 755, at 5:21-24. It is reasonable to find that one of ordinary skill in the art would have expected the sheets or plies of plasticized PVB to adhesively bond to one another during the autoclave cycle, and thus, form a unitary structure. *Sovish*, 769 F.2d at 742.

3. However, the Examiner found that Chaussade 089 discloses a laminate comprising a polyurethane layer having a thickness from 0.1 mm to 3.0 mm, i.e., from about 4 mils to 117 mils thick. Ans. 4.

The Examiner concluded that it would have been obvious to one of ordinary skill in the art to reduce the thickness of the polyurethane layers in Chaussade 755 in view of the teachings of Chaussade 089. Ans. 5.

Since the polyurethane layers in Chaussade 755 are thicker than 5 mils, the Appellants argue that Chaussade 755 teaches away from thinner polyurethane layers as recited in claims 1, 2, 9, and 10. App. Br. 8.

Chaussade 755 does not expressly disclose that thinner polyurethane layers should not be used in the disclosed glass laminate or suggest that thinner polyurethane layers would render the glass laminate unsuitable for its intended use. *Para-Ordnance Mfg, Inc. v. SGS Importers Int'l, Inc.*, 73 F.3d 1085, 1090 (Fed. Cir. 1995) (there is nothing about the prior art Browning Hi-Power handgun that teaches that convergence should not, or cannot, be used to guide the magazine; thus, the Browning Hi-Power handgun does not require a finding that it “teaches away”). Thus, contrary to the Appellants’ arguments, we find that Chaussade 755 does not “teach away” from using thinner polyurethane layers in the disclosed glass laminate.

The Appellants also argue that the combined teachings of the references do not suggest reducing the thickness of the polyurethane layers in Chaussade 755. In particular, the Appellants argue that Chaussade 755 discloses a two pane glass laminate and Chaussade 089 discloses a bilayer comprising a single pane of glass. The Appellants argue that the performance issues of a bilayer as in Chaussade 089 and a two pane glass

laminate as in Chaussade 755 are different. According to the Appellants, bilayers are typically more prone to environmental degradation than glass laminates because they lack a second pane of glass and have a thin polymer film layer exposed directly to the air.¹¹ App. Br. 9-10.

The Appellants have failed to direct us to any evidence supporting this argument. *Rohm and Haas Co. v. Brotech Corp.*, 127 F.3d 1089, 1092 (Fed. Cir. 1997) (nothing in the rules or in jurisprudence requires the fact finder to credit unsupported or conclusory assertions); *see also In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1971) (“argument in a brief cannot take the place of evidence”).

However, to the extent that the Appellants’ argument has merit, it is not persuasive. The Examiner found that Chaussade 089 discloses that adhesion problems exist between a PVB layer and a glass layer at low temperatures and/or in the presence of high humidity. The Examiner found that Chaussade 089 discloses that these adhesion problems may be solved by using a polyurethane layer as thin as about 4 mils between the PVB and glass layers. Ans. 7; *see also* Chaussade 089, at 2:4-7 (“The addition of an adhesive film of polyurethane enables good bonding of the complex sheet with the glass substrate via the intermediate PVB layer, in very widely varying conditions of temperature and humidity.”). The Appellants have not pointed to any error in the Examiner’s findings.

¹¹ The Appellants also argue that the teachings of Shaffer do not suggest reducing the thickness of the polyurethane layers in Chaussade 755. App. Br. 9. As discussed above, the teachings of Shaffer are cumulative of the teachings of Chaussade 089 with respect to the thickness of the polyurethane layers. Thus, it is not necessary to decide whether the teachings of Shaffer, in combination with the other applied prior art, would have rendered obvious the thickness of the polyurethane layers recited in claims 1, 2, 9, and 10.

According to the Appellants, the glass laminate of Chaussade 755 is more durable than the bilayer disclosed in Chaussade 089. Therefore, based on the combined teachings of Chaussade 089 and Chaussade 755, we find that one of ordinary skill in the art would have expected a polyurethane layer as thin as about 4 mils to enable good bonding between the glass and PVB layers in the more durable glass laminate of Chaussade 755. We further find that economic factors would have motivated one of ordinary skill in the art to use a thinner polyurethane layer in the Chaussade 755 laminate. *In re Thompson*, 545 F.2d 1290, 1294 (CCPA 1976) (economic factors alone would have motivated the skilled artisan to improve the prior art method).

For the reasons set forth above, the Appellants have not shown that the Examiner reversibly erred in rejecting claims 1-3 and 8-14 under 35 U.S.C. § 103(a) as being unpatentable over the combined teachings of Chaussade 755, Chaussade 089, Shaffer, and Ehrhart.¹²

F. DECISION

The rejection of claim 8 under 35 U.S.C. § 102(b) as being anticipated by Chaussade 755 is affirmed.

The rejection of claims 1-3 and 8-14 under 35 U.S.C. § 103(a) as being unpatentable over the combined teachings of Chaussade 755, Chaussade 089, Shaffer, and Ehrhart is affirmed.

¹² According to the Examiner, “Ehrhart teaches plasticizer migration from the layer containing plasticizer with higher concentration to the layer containing no plasticizer or lower concentration of plasticizer.” Ans. 5. On appeal, the Appellants have not pointed to any error in the Examiner’s findings as to Ehrhart.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a) (2008).

AFFIRMED

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