

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte ANDREW P. GODBEHERE and STEPHEN WILLIAMS

Appeal No. 2006-0551
Application No. 10/182,904

HEARD: MARCH 21, 2006

Before FRANKFORT, McQUADE, and BAHR, Administrative Patent Judges.
BAHR, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 3, 4 and 6, which are all of the claims pending in this application.

We AFFIRM.

BACKGROUND

The appellants' invention relates to a method of reinforcing a laminated skin for an aircraft. Independent claim 1 is representative of the invention and is reproduced below in the opinion section of this decision.

Claims 1, 3 and 6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Westre¹.

Claim 4 stands rejected under 35 U.S.C. § 103 as being unpatentable over Westre.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding these rejections, we make reference to the answer (mailed June 22, 2005) for the examiner's complete reasoning in support of the rejection and to the brief (filed May 4, 2005) and reply brief (filed August 22, 2005) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied Westre reference, and to the

¹ European Patent Application 783,960, published July 16, 1997, with inventors Westre et al.

respective positions articulated by the appellants and the examiner. As a consequence of our review, we make the determinations which follow.

Independent claim 1 reads as follows:

1. A method of reinforcing a laminated member for an aircraft, the method comprising:

 laying-up a plurality of layers to form part of the laminated member,

 forming a composite reinforcement member from a plurality of layers,

 positioning the composite reinforcement member on a layer of the laminate^[2] member and

 laying-up at least one further layer so as to complete the laying up of the laminated member and enclose the composite reinforcing^[3] member at a position adjacent one surface of the completed laminated member.

² The term "lamine" should be changed to "laminated" for consistency with the earlier recitation in claim 1.

³ The term "reinforcing" in the final step of claim 1 should ostensibly be "reinforcement" for consistency with the earlier recitation of a "composite reinforcement member." While this does not render the claim indefinite, this inconsistency is deserving of correction.

Westre discloses methods of producing hybrid laminates for use as aircraft skin components. The hybrid laminates of Westre's invention include spaced-apart layers of a metallic foil, with a layer or layers of an organic polymeric matrix composite. Foils of titanium or titanium alloy are preferred for use as the metallic foil. Each layer of organic composite is made up of at least one ply including an organic polymeric resin within which are embedded parallel reinforcing fibers. While the fibers within each ply of organic composite are parallel, the fibers of one ply may be at right angles, or any other angle, to the fibers in another ply of organic composite of the hybrid laminate.

According to Westre (column 7, line 58, to column 8, line 30),

[t]he hybrid laminates may be made by any of a number of methods. However, in the case of thermoplastic composites, it is preferred that the laminates are prepared by successively laying down long continuous strips of thermoplastic resin preimpregnated fibrous tapes ("prepregs"), by means of a thermoplastic application head, directly onto the treated outer surface of a foil. By laying down strips of tape side-by-side while consolidating these through the application of heat and pressure, a continuous ply of composite with parallel-oriented fibers is produced. Thereafter, another ply or plies of composite may be laid down on top of the first ply, depending upon the properties needed of the laminate. The ply or plies make up a layer of composite. Then, a layer of foil is rolled out over the consolidated composite layer and is bonded, for example heat-fused, onto the composite. Thereafter, a next layer of organic composite is formed on top of the metallic foil by laying down a ply or plies, as described above. Finally, after laying down the predetermined number of layers of metallic foil and organic polymeric matrix, an outer layer of metallic

foil is applied. This is an important aspect of the invention since the outer layers of foil protect the underlying organic composite of the hybrid laminates from the environment and attack by fluids.

Alternative methods of fabrication, some discussed in more detail below, are also useful. For example, all layers of the hybrid laminate may be stacked in an autoclave or press, without prefusion of layers, and may then be fused under applied heat and pressure into a unitary laminate.

In rejecting appellants' claim 1 as being anticipated by Westre, the examiner points to the hybrid laminate illustrated in Westre's Figure 5 and discussed in columns 15 and 16. As explained on page 3 of the answer, the examiner finds that Westre discloses laying-up a plurality of layers (bottom foil layer 10, first composite layer 15, which is made up of three plies of composite, and second foil layer 10) to form part of a laminated member, forming a composite reinforcement member (the second composite layer 15, which is made up of three plies of composite), positioning the composite reinforcement member on a layer (the second foil layer 10) of the laminated member and laying-up at least one further layer (third foil layer 10⁴) so as to complete the laying

⁴ The third composite layer 15 and top foil layer 10 could also be considered to be part of the "at least one further layer" in appellants' claim 1.

up of the laminated member and enclose the composite reinforcing member at a position adjacent one surface of the completed laminated member.

Appellants argue that Westre does not teach the steps of "forming a composite reinforcement member from a plurality of layers" and "positioning the composite reinforcement member on a layer of the laminate member" (brief, pages 6-8). The basis of this argument appears to be that Westre applies single layers to serve as the reinforcement but gives no indication that more than one layer is supplied as a composite reinforcement member (brief, page 7). This argument is not well taken, as the examiner has specifically pointed out in the answer the plurality of layers (the three plies of the second composite layer 15) that form the composite reinforcement member. While fabrication of the hybrid layer illustrated in Figure 5 by either of Westre's specifically enumerated methods would appear to include laying up the plies of composite layer 15 one at a time, nothing in claim 1 distinguishes such formation and positioning of the composite layer.

A two-part test has been established for determining if the steps of a method claim that do not otherwise recite an order must nonetheless be performed in the order in which they are written. We first look to the claim language itself to determine if, as a matter of logic or grammar, the steps must be performed in the order written. If not, we next look to the rest of appellants' specification to determine whether it directly or

implicitly requires such a narrow construction. See Altiris Inc. v. Symantec Corp., 318 F.3d 1363, 1369-70, 65 USPQ2d 1865, 1869 (Fed. Cir. 2003).

Appellants' claim 1 does not include any language requiring that, as a matter of logic or grammar, the recited steps be performed in any particular sequence. Moreover, there is nothing in the "forming" and "positioning" steps which would indicate to one of ordinary skill in the art that the "forming" step must inherently be performed prior to the "positioning" step rather than, for example, at the same time as the "forming" step. On the contrary, one of ordinary skill in the art would understand that, as evidenced by Westre, a composite reinforcement member, such as composite layer 15 of Westre's Figure 5 hybrid laminate, can be positioned on a layer of a laminated member (bottom foil layer 10, first composite layer 15 and second foil layer 10) at the same time that it is being formed from a plurality of layers.

We next look to the rest of appellants' specification to determine whether it requires that the step of forming the composite reinforcement member must be performed before the step of positioning the composite reinforcement member on a layer of the laminated member. It is apparent from a reading of the discussion on pages 1 and 2 of appellants' specification that the improvement of appellants' inventive method and laminated member over the prior art illustrated in Figure 1 is that, "instead of providing a plurality of reinforcement members, each being placed between different adjacent layers of the laminated member, only the single composite reinforcement

member need be placed between the adjacent layers." We thus conclude that appellants' specification, while conveying a criticality in providing a composite reinforcement member which is placed between only two adjacent layers of the laminated member, rather than being comprised of layers separated by layers of the laminated member, does not expressly or implicitly require that the composite reinforcement member be formed from a plurality of layers prior to being positioned on a layer of the laminated member, rather than simultaneously with such positioning.

We additionally note that claim 1 does not require that the composite reinforcement member be a unitary or integral member at the time that it is positioned on a layer of the laminated member. Rather, the claim language is sufficiently broad to encompass a method, such as that disclosed by Westre, wherein the composite reinforcement member is positioned on a layer of the laminated member one layer, or *ply*, at a time.

The appellants' remark in the sentence bridging pages 7 and 8 of the brief that "the use of interleaved additional reinforcing layers will displace most of the skin composite layers from being parallel with the skin wall thereby reducing their tensile strength and increasing the possibility of delaminations" appears to be directed to features of appellants' invention not set forth in the claims and, as such, is not relevant to the issue of whether the subject matter of claim 1 is anticipated by Westre. It is well

established that limitations not appearing in the claims cannot be relied upon for patentability. In re Self, 671 F.2d 1344, 1348, 213 USPQ 1, 5 (CCPA 1982).

Appellants argue on pages 8-9 of the brief that Westre does not teach "laying-up at least one further layer" so as to "enclose the composite reinforcing member." This argument is ostensibly grounded on appellants' position that Westre does not teach the steps of forming and positioning a composite reinforcement member as discussed above (brief, page 9; reply brief, page 6) and is thus unpersuasive for the reasons discussed above.

Appellants' argument on pages 9-10 of the brief that Westre's disclosure of interleaving foil layers between the composite layers somehow teaches away from the method recited in claim 1 is not well taken. Nothing in claim 1 excludes the presence of foil layers as any of the plurality of layers recited in claim 1.

In light of the foregoing, the examiner's rejection of claim 1 as being anticipated by Westre is sustained. The like rejection of dependent claims 3 and 6⁵, as well as the rejection of claim 4 as being unpatentable over Westre, are also sustained since

⁵ Claim 6 is directed not to a method, but to a laminated member reinforced using a method according to claim 1. It is thus a product-by-process claim. We note, in this regard, that the patentability of a product does not depend on its method of production. If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process. In re Thorpe, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985). Thus, even assuming that the method of appellants' claim 1 were deemed to be distinct from Westre's process of making the hybrid layer, the laminated member of claim 6 is unpatentable over the hybrid layer of Westre if it is the same as or obvious in view of Westre's hybrid layer.

appellants have not challenged such with any reasonable specificity⁶ (see In re Nielson, 816 F.2d 1567, 1572, 2USPQ2d 1525, 1528 (Fed. Cir. 1987)).

CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 3, 4 and 6 is
AFFIRMED.

⁶ As set forth in 37 CFR § 41.37(c)(1)(vii), "[a] statement which merely points out what a claim recites will not be considered an argument for separate patentability of the claim."

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

AFFIRMED

CHARLES E. FRANKFORT)
Administrative Patent Judge)
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JOHN P. McQUADE) BOARD OF PATENT
Administrative Patent Judge) APPEALS
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Comment [jvn1]: Type address

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