

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

Ex parte EDWARD NORMAN MCCLURE,  
STEVEN ALAN JACKSON  
and PHILIP J. SWEESY

---

Appeal No. 2003-0391  
Application 09/228,433

---

ON BRIEF

---

Before STAAB, MCQUADE, and NASE, Administrative Patent Judges.  
MCQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Edward Norman McClure et al. appeal from the final rejection (Paper No. 15) of claims 1, 3 through 6 and 8 through 13, all of the claims pending in the application.

THE INVENTION

The invention relates to "fiber-reinforced resin structures, and more particularly to a process for optimizing resin distribution with the incorporation of a grooved core integral to the fiber-reinforced resin structure" (specification, page 1).

Appeal No. 2003-0391  
Application 09/228,433

THE PRIOR ART

The references relied on by the examiner to support the final rejection are:

Palmer et al. (Palmer)	4,942,013	Jul. 17, 1990
Seemann, III et al. (Seemann)	5,721,034	Feb. 24, 1998
Louderback et al. (Louderback)	5,885,513	Mar. 23, 1999

THE REJECTION

Claims 1, 3 through 6 and 8 through 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Louderback in view of Palmer and Seemann.

Attention is directed to the appellants' main and reply briefs (Paper Nos. 18 and 20) and to the examiner's answer (Paper No. 19) for the respective positions of the appellants and the examiner regarding the merits of this rejection.

DISCUSSION

Claim 1, the sole independent claim on appeal, recites a process for optimizing resin distribution during VARTM (vacuum assisted resin transfer molding) fabrication of a fiber-reinforced resin structure having a core body with a core upper surface and at least one fiber-reinforced ply disposed upon the core upper surface. The claimed process comprises, inter alia, the steps of forming longitudinal resin distribution grooves

Appeal No. 2003-0391  
Application 09/228,433

along the core upper surface substantially parallel to the longitudinal resin flow axis and arraying lateral resin distribution grooves along the core upper surface by forming the lateral resin distribution grooves to intersect the longitudinal resin distribution grooves, wherein "the lateral resin distribution grooves are selectively spaced to wet the fiber-reinforced ply at substantially equal ply resin wetting rates in directions along the longitudinal resin flow axis and perpendicular thereto across the core upper surface upon the introduction of resin." As framed by the appellants, the dispositive issue in the appeal is whether the combined teachings of Louderback, Palmer and Seemann would have suggested a process embodying the foregoing selective spacing of the lateral resin distribution grooves.

All three of the applied references pertain to VARTM fabrication of a fiber-reinforced resin structure having a core body and at least one fiber-reinforced ply disposed upon the core upper surface. Finding that Louderback, the primary reference applied in support of the rejection, does not disclose the step of forming lateral resin distribution grooves which intersect the longitudinal resin distribution grooves 60a in the upper surface

of foam layer or core 20, the examiner turns to Palmer's disclosure of a core 158 having intersecting longitudinal and transverse grooves 160 and 162 on its upper surface to overcome this deficiency in Louderback. Notwithstanding the appellants' arguments to the contrary, Palmer's teaching (see column 12, lines 18 through 42; and column 13, lines 26 through 36) that such grooves afford rapid and uniform impregnation of the plies sandwiching the core would have provided the artisan with ample suggestion or motivation to utilize intersecting longitudinal and transverse grooves on the upper surface of Louderback's core. Indeed, Louderback's statement that "grooves 60a can . . . extend in longitudinal, transverse and/or other directions to distribute resin" (column 5, lines 14 through 17) arguably would have suggested the same thing. The examiner allows, however, that even as so modified in view of Palmer, the Louderback process would still lack response to the selective spacing of the lateral resin distribution grooves required by claim 1. The examiner's reliance on Seemann to cure this shortcoming is unsound.

Seemann discloses a core 12 having on its surface 16 one or more main feeder grooves 14 and a plurality of microgrooves 18 arranged transversely to the main feeder grooves. According to Seemann, "[t]he cross-sectional area of the main feeder groove[s]

and the cross-sectional area and spacing of the microgrooves are optimized to provide a suitable time to allow the resin to impregnate all of the fiber material before curing without leaving unimpregnated areas" (column 4, lines 17 through 21). Equating this statement to a teaching of substantially equal ply resin wetting rates in the longitudinal and transverse directions (see page 5 in the answer), the examiner submits that

it would have been obvious for one of ordinary skill in the art at the time of the invention to have optimized the spacing of the longitudinal and lateral resin distribution grooves as taught by Seemann, III *et al.* ('034) in the process of Louderback *et al.* ('513) in view of Palmer *et al.* ('013) in order to obtain equal wetting rates due to a variety of reasons such as to improve wetting of the reinforcement layers, avoid resin-rich or resin-free areas, improve resin to fiber ratio, etc. and also because Seemann, III *et al.* ('034) teach that optimization allows the resin to impregnate all of the fiber material before curing without leaving unimpregnated areas [answer, pages 5 and 6].

The Seemann reference, however, does not provide any factual basis for the examiner's determination that it teaches or would have suggested substantially equal ply resin wetting rates in the longitudinal and transverse directions. Seemann's broadly stated objective of optimizing the cross-sectional area of the main feeder grooves and the cross-sectional area and spacing of the microgrooves to allow complete resin impregnation before curing does not ostensibly require substantially equal ply resin wetting

Appeal No. 2003-0391  
Application 09/228,433

rates, and the examiner has not cogently explained or demonstrated, nor is it evident, why the artisan would have gleaned therefrom any suggestion of substantially equal ply resin wetting rates.

Thus, the combined teachings of Louderback, Palmer and Seemann do not justify the examiner's conclusion that the differences between the subject matter recited in independent claim 1 and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. Accordingly, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of claim 1, and dependent claims 3 through 6 and 8 through 13, as being unpatentable over Louderback in view of Palmer and Seemann.

#### SUMMARY

The decision of the examiner to reject claims 1, 3 through 6 and 8 through 13 is reversed.



Appeal No. 2003-0391  
Application 09/228,433

STETINA, BRUNDA, GARRED & BRUCKER  
75 ENTERPRISE, SUITE 250  
ALISO VIEJO, CA 92656