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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ALLEN L. PRICE, DAVID BRAHMS, SCOTT JANCO, COURTNEY MUSCIANO, ROBERT GRAVEL, ERIC A. BARTER, MATT LANGLEY, JAMES STAHL, and VINCENT GALLACHER

Appeal 2021-003888
Application 14/985,897
Technology Center 1700

Before ADRIENE LEPIANE HANLON, CATHERINE Q. TIMM, and N. WHITNEY WILSON, *Administrative Patent Judges.*

TIMM, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1 and 6–10. We have jurisdiction under 35 U.S.C. § 6(b). A video hearing was held on November 8, 2021.

We REVERSE.

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[1] "Appellant" refers to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as DuPont Safety & Construction, Inc. Reply Br. 1.

CLAIMED SUBJECT MATTER

The claims are directed to a ballistic material including a woven para-aramid ballistic fabric and a hydroentangled nonwoven fiber component needlepunched with the fabric to form a consolidated material. *See, e.g.*, claim 1. Claim 1, reproduced below with the limitation most at issue italicized, is illustrative of the claimed subject matter:

> 1. A ballistic material, comprising:
>
> a first woven para-aramid ballistic fabric having a fiber denier in a range of 50 d to 5000 d; and
>
> a *hydroentangled* nonwoven fiber component consisting essentially of ballistic grade para aramid fibers having a denier in a range of about 0.5 d to about 2.5 d and a density of about 10 gsm to about 200 gsm; wherein
>
> the hydroentangled nonwoven component is needlepunched with the woven ballistic fabric to form a consolidated material.

Appeal Br. 9 (Claims Appendix) (emphasis added).

REJECTION

Claims 1 and 6–10 are rejected under 35 U.S.C. § 103 as being unpatentable over Price (US 7,101,818 B2, issued Sept. 5, 2006) in view of Van der Loo (US 5,569,528, issued Oct. 29, 1996). Final Act. 3.

OPINION

All of the claims require a *hydroentangled* nonwoven component needlepunched with a woven ballistic fabric to form a consolidated material. *See, e.g.*, claim 1. There is no dispute that Price teaches a similar consolidated material with one important difference: Price's nonwoven is taught to be manufactured, for example, by dry laid carding and mechanical

needling. Price, col. 4, ll. 8–11. Price is silent on its non-woven component being hydroentangled.

The Examiner acknowledges that Price does not disclose a hydroentangled component and turns to Van der Loo. Final Act. 3.

Van der Loo provides some evidence that hydroentangling and needling were known alternatives for entangling layers of carded nonwovens. Van der Loo, col. 5, ll. 1–19; col. 6, ll. 8–19. Moreover, the Examiner's finding of a suggestion of using hydroentangling instead of needling to form a nonwoven is supported by Van der Loo. Van der Loo, col. 6, ll. 17–18 ("The advantage of hydroentangling over needling is that the fibres are damaged less."). Although this advantage is geared toward a step of hydroentangling a stack of carded, calendared, and stretched polyolefin nonwoven layers (Van der Loo, col. 5, ll. 1–19; col. 6, ll. 8–19), it is reasonable to conclude that mechanical needling and hydroentangling were understood, generally, to be useful for entangling fibers for making nonwovens.

What tips the scales on this record is Appellant's showing of unexpected results.

Appellant has provided evidence regarding the expectation of the ordinary artisan in the art. According to Appellant, "[t]he expectation in the art is that an identical stack of woven para-aramid layers reinforced with the same weight of nonwoven para-aramid fibers of the same denier would yield the same ballistic performance." Appeal Br. 7. Appellant supports this statement with evidence. Particularly, the linearity of the correlation between weight and ballistic performance measured as V-50. Declaration of David Brahms, dated Aug. 10, 2018, ¶¶ 6–7.

Second, Appellant has provided declaratory evidence that their results were different than those of the prior art. After detailing the process of forming "shoot packs" of ballistic materials made with identical materials and by identical processes except for the use of a non-woven that is hydroentanged versus needled, Brahms declares that "[a] significant difference in the V-50 performance was observed between the two types of shoot packs, notwithstanding that the same materials in the same weights were used to make the different shoot packs." Declaration of David Brahms, dated Feb. 5, 2019, ¶¶ 7–11 ("Brahms II Decl."). According to Brahms, "[t]he mean V-50 for the batting fiber-incorporated shootpacks was 1539.40 fps. The mean V-50 for the spunlace 1609.20. Statistical analysis verifies that the observed difference was not merely random." Brahms II Decl. ¶ 11. The data is shown in Exhibit A attached to the Brahms II Declaration. The results represent a difference between the closest prior art and Appellant's claimed invention.

Third, Brahms declares that the result was unexpected. Brahms declares that "[w]hen we first substituted spunlace material, we had hoped for some processing advantages and some reduction in weight for the final ballistic product. We did not expect an improvement in ballistic properties." Brahms II Decl. ¶ 5. And Brahms further declares that,

> [s]pecifically, an amount of fiber material, incorporated as spunlace, produced unexpected advantages in terms of the ballistic performance as compared to the same amount of fiber material incorporated from a needled batting. We now believe that the improvement in ballistic performance is due to the availability of the fibers of the spunlace material.

Brahms II Decl. ¶ 6. The data shows an improvement in ballistic performance (V-50) and Brahms declares that the difference was unexpected.

The Examiner determines that these results are in the realm of the expected because the results are on the order of a 4.5% improvement or even smaller for the shoot packs containing a single nonwoven layer. Ans. 5–6. But the Examiner's determination discounts Brahms's specific statements that the difference was unexpected to them because they were not expecting that lower weight products would achieve V-50 ballistic performance improvements above the normal linear correlation seen in other known products. The Examiner failed to give Declarant Brahms's statements proper weight. The Examiner's error was reversible error given the lack of evidence, on this appeal record, showing that those of ordinary skill in the art would have expected the V-50 deviation from the norm.

CONCLUSION

The Examiner's decision to reject claims 1 and 6–10 is reversed.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 6–10	103	Price, Van der Loo		1, 6–10

REVERSED