UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KLAUS BRECHT and PETER HAAS

Appeal 2006-2980
Application 10/683,240
Technology Center 1700

Decided: August 6, 2007

Before CHARLES F. WARREN, CATHERINE Q. TIMM, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

Statement of the Case

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 1-3. We have jurisdiction under 35 U.S.C. § 6.

Appellants' invention relates to cellular amine-crosslinked polyurethane elastomers. The cellular elastomers of the present invention are useful for soles of shoes and exhibit very good low temperature properties and heat resistance up to 160°C (Specification 5-6).

Representative independent claim 1, as presented in the Brief, appears below:

> 1. Cellular amine-crosslinked polyurethane elastomers comprising the reaction product of:
>
> A) one or more compounds selected from the group consisting of polyisocyanates, polyisocyanate prepolymers, modified polyisocyanates and mixtures thereof,
> with
>
> B) one or more polyols selected from the group consisting of polyetherpolyols, polyesterpolyols and mixtures thereof,
> and
>
> C) a mixture of components comprising:
>
> C1) one or more aromatic amines having at least two primary amine groups per molecule,
>
> C2) one or more quaternary ammonium salts,
> and
>
> C3) optionally, one or more short-chain diols having a molecular weight of no more than 400 g/mol;
> in the presence of
>
> D) water and/or physical blowing agents,
>
> E) catalysts,
> and
>
> F) optionally, additional auxiliary substances and/or additives..

The Examiner relies on the following references in rejecting the appealed subject matter:

Meisert	US 4,280,007	Jul. 21, 1981
Nissen	US 4,590,219	May 21, 1986
Vratsanos	US 5,173,516	Dec. 22, 1992

Claims 1-3 stand rejected under 35 U.S.C. § 103 as unpatentable over Meisert in view of Vratsanos. Claims 1-3 also stand rejected under 35 U.S.C. § 103 as unpatentable over Nissen in view of Vratsanos.

The issue presented for review is as follows:

Has the Examiner reasonably determined that a person having ordinary skill in the art would have been led to form a cellular amine cross-linked polyurethane elastomer utilizing a quaternary ammonium salt as one of the reaction component within the meaning of 35 U.S.C. § 103? On this record, we answer this question in the affirmative.

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 considerations. *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 would have been 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. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1396 (2007) *quoting In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336-37 (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."); *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969)("Having established that this knowledge was in the art, the examiner could then properly rely, as put forth by the solicitor, on a conclusion of obviousness 'from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference.'"); *In re Hoeschele*, 406 F.2d 1403, 1406-07, 160 USPQ 809, 811-812 (CCPA 1969)("[I]t is proper to take into account not only specific teachings of the references but also the inferences which one skilled in the art would reasonably be expected to draw therefrom . . ."). The analysis supporting obviousness, however, should be made explicit and when the claimed subject matter involves more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement, the analysis should "identify a reason that would have prompted a person of ordinary skill in the art to combine the elements" in the manner claimed. *KSR*, 127 S.Ct. at 1731, 82 USPQ2d at 1389.

The Examiner found that Meisert describes cellular anime cross-linked polyurethane elastomers comprising a reaction product of isocyanate pre-polymers, polyols, aromatic amine chain extenders combined in the presence of water, catalysts, and other additives (Answer 3). Meisert discloses that water is a known blowing agent for processing pre-polymers into cellular materials (col. 1, ll. 33-37). The Examiner found that Meisert differs from

the claimed invention in that quaternary ammonium salts are not disclosed as one of the reaction components (Answer 3).

The Examiner found that Nissen describes cellular anime cross-linked polyurethane elastomers comprising a reaction product of isocyanate pre-polymers, polyols, aromatic amine chain extenders combined in the presence of water, catalysts, and other additives (Answer 4). Nissen discloses the blowing agent can comprise water (col. 7, ll. 28-29). Nissen discloses organic carboxylic as salt are suitable as additives to the reaction mixture (col. 7, ll. 54-65). The Examiner found that Nissen differs from the claimed invention in that quaternary ammonium salts are not disclosed as one of the reaction components (Answer 4).

The Examiner found that Vratsanos describes the suitability of employing quaternary ammonium salts as a blowing agent utilized for the preparation of cellular polyurethane elastomers (Answer 3-4). Vratsanos discloses the blowing agent can comprise water, acid blocked catalysts or alternatively quaternary ammonium salts (col. 3, ll. 41-53).

The Examiner concludes that it would have been obvious to one of ordinary skill in the art to form the polyurethane elastomer of Meisert or Nissen utilizing quaternary ammonium salts as one of the blowing agent reaction components (Answer 3-4).

Appellants contend that Meisert and Nissen are both directed to a higher density polyurethane elastomer foam and Vratsanos is directed to a lower density polyurethane elastomer foam.[1] Thus, the substitution and/or

[1] Appellants consider the disclosures of Meisert and Nissen to be equivalent to one another (Br. 10).

inclusion of a quaternary ammonium salt into the process systems of Meisert or Nissen would have been contrary to the disclosure of Vratsanos (Br. 5).

Appellants' contentions are not persuasive. A person of ordinary skill in the art would have recognized that blowing agents are regularly incorporated into the reaction components utilized in forming elastomeric polyurethane foams. (See Meisert col. 1, ll. 33-38 and Nissen col. 1, ll. 17-25). The references cited in the present record establish that a variety of compounds are known as blowing agents. As stated above, Vratsanos describes the suitability of employing quaternary ammonium salts as blowing agent utilized for the preparation of cellular polyurethane elastomers. Thus, a person of ordinary skill in the art would have reasonably expected that quaternary ammonium salts could have been incorporated into the blowing agent of Meisert and Nissen. "For obviousness under § 103, all that is required is a reasonable expectation of success." *In re O'Farrell*, 853 F.2d 894, 904, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988). Appellants have not directed us to evidence with technical reasoning that establishes a person of ordinary skill in the art would not have reasonably expected that quaternary ammonium salts would have been compatible with the reaction components described in Meisert and Nissen. Appellants have not directed us to evidence that the utilization of quaternary ammonium salts as a blowing agent, without changing the other reactive components, in the preparation of cellular polyurethane elastomers would unexpectedly vary the density of the resulting product in Meisert and Nissen .

For the reasons set forth above and in the Answer we affirm the rejection of claims 1-3.

ORDER

The rejection of claims 1-3 under 35 U.S.C. § 103(a) is affirmed.

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

AFFIRMED

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