

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HYUNKOOK SHIN and MARK F. TEASLEY

Appeal 2008-0196
Application 10/415,636
Technology Center 1700

Decided: June 4, 2008

Before EDWARD C. KIMLIN, CHUNG K. PAK, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

PAK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1 through 9, all of the claims pending in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. § 6.

We AFFIRM.

STATEMENT OF THE CASE

The subject matter on appeal is directed to, *inter alia*, a spin fluid (starting material) used in a flash spinning process for preparing plexifilamentary film-fibril strand or a foam, and a foam resulting from the flash spinning process. Further details of the appealed subject matter are recited in representative claims 5 and 8 reproduced below:

5. A spin fluid comprising:

- (a) 40 to 70 weight percent based on the weight of the spin fluid of synthetic fiber-forming polycyclopentene or copolymers thereof having a number average molecular weight of 10,000[0] to 100,000 and an end melting point between 250°C to 330°C and
- (b) a primary spin agent having an atmosphere boiling point less than 150°C selected from the group consisting of 6 to 9 carbon cycloalkanes, 6 to 9 carbon alkyl-substituted cycloalkanes and alkyl-substituted aromatic hydrocarbons.

8. A flashspun microcellular foam comprising polycyclopentene or copolymers thereof having a number average molecular weight of 10,000 to 100,000 and an end melting point between 250°C to 330°C.

As evidence of unpatentability of the appealed subject matter, the Examiner has proffered the following prior art references:

Cannarsa	US 4,773,466	Sep. 27, 1988
Brookhart	US 5,866,663	Feb. 2, 1999
Akki	US 6,270,709 B1	Aug. 7, 2001

The Examiner has rejected the claims on appeal based on the above proffered prior art references as follows:

- 1) Claim 8 under 35 U.S.C. § 102(b) as anticipated by the disclosure of Cannarsa;
- 2) Claim 8 under 35 U.S.C. § 103(a) as unpatentable over the disclosure of Cannarsa and
- 3) Claims 1 through 9 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Brookhart and Akki.

Appellants appeal from the Examiner's decision rejecting the claims on appeal under 35 U.S.C. §§ 102(b) and 103(a).

RELEVANT FACTUAL FINDINGS, PRINCIPLES OF LAW, ISSUES, AND ANALYSES

A. REJECTIONS OF CLAIM 8 UNDER § 102(b) and § 103(a)

As held by the predecessor to our reviewing court in *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977):

Where ...the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior products do not necessarily or inherently possess the characteristics of his claimed product.... Whether the rejection is based on "inherency" under 35 U.S.C. § 102, on "prima facie obviousness" under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products (Footnotes and citations omitted).

The Examiner's § 102 and § 103 rejections of claim 8 is premised upon the correctness of the Examiner's interpretation of "polycyclopentene [and] copolymers thereof" recited in claim 8.

The dispositive question is, therefore, whether the Examiner has properly interpreted “polycyclopentene [and] copolymers thereof” recited in claim 8 as including the copolymer used to form Cannarsa’s foam within the meaning of 35 U.S.C. § 102 and § 103. On this record, we answer this question in the negative.

As is apparent from the Answer, the Appeal Brief, and the Reply Brief, there is no dispute that Cannarsa teaches a polyalkylene carbonate copolymer foam produced from a copolymer of cyclopentene *oxide* and carbon dioxide. Yet, the Examiner has not explained why and how “polycyclopentene [and] copolymers thereof” recited in claim 8 encompasses Cannarsa’s copolymer having cyclopentene *oxide* and carbon dioxide. That is, the Examiner has not proffered any reason to interpret polycyclopentene or cyclopentene, which is part of the claimed copolymer thereof, as having an oxygen functional group.

Accordingly, we concur with Appellants that the Examiner has not demonstrated that Cannarsa’s foam is made of the claimed material within the meaning of 35 U.S.C. § 102 (b) and § 103(a).

B. REJECTION OF CLAIMS 1 THROUGH 9 UNDER § 103¹

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

¹ Appellants do not separately argue patentability of the subject matter recited in the individual claims on appeal (App. Br. 4-6). Therefore, for purposes of this appeal, we select claim 5 and decide the propriety of the Examiner’s rejection of claims 1 through 8 based on this claim alone consistent with 37 C.F.R. § 41.37(c) (1)(vii) (2005).

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.*, 383 U.S. 1, 17-18 (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 (2007); *see also DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (Fed. Cir. 2006).

Applying the above principles of law to the present facts, the Examiner has determined that Brookhart and Akki would have rendered the subject matter recited in claims 1 through 9 obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103(a). The Examiner has found that:

Brookhart et al (see the entire document, in particular, col. 63, lines 47-54; col. 64, lines 27-36; col. 141 (Example 182)) teaches a process of flash spinning polycyclopentene polymer to make products (which products can be, for example, pulp fibers or foams) as set forth in the instant claims, except that Brookhart et al does not teach the particulars of the flash spinning (e.g., spin agent, weight percent of polymer)...

Appellants have not disputed the above finding (Reply Br. 5-6 and App. Br. 5-6). Nor have Appellants argued that the polycyclopentene polymer taught by Brookhart does not have the claimed number average molecular weight and end melting point (*id.*). See also Brookhart, col. 141, Example 182, and

col. 64, ll. 48-51 and col. 62, ll. 7-15. Rather, Appellants contend that one of ordinary skill in the art would not have been led to employ the claimed spin conditions (i.e., the claimed spin agents and polyolefin concentrations) in producing fibers or foams via flash spinning polycyclopentene (*id.*).

The dispositive question is, therefore, whether one of ordinary skill in the art would have been led to employ the claimed conditions (e.g., spin agents (solvents) and polyolefin concentration) in Brookhart's flash spinning polymerization of polycyclopentene polymer within the meaning of 35 U.S.C. § 103. On this record, we answer this question in the affirmative.

We find that Brookhart, by virtue of not specifying the details of its polycyclopentene flash spinning polymerization, leaves it to a person having ordinary skill in the art to select appropriate conventional flash spinning conditions (e.g., appropriate conventional spin agents (solvents) and polyolefin concentration) via routine experimentation to form its fibers or foams having excellent heat resistance, dimensional stability, and chemical resistance (col. 63, ll. 46-54 and col. 64, ll. 30-36).² In addition, we note

² To find otherwise would be contrary to a presumption of validity and operability applicable to a U.S. patent, Brookhart, under 35 U.S.C. § 282. See *University of Rochester v. G.D. Searle & Co., Inc.*, 358 F.3d 916, 920 (Fed. Cir. 2004); *In re Spence*, 261 F.2d 244, 246 (CCPA 1958). Meeting the enablement requirements of 35 U.S.C. § 112, first paragraph, is a prerequisite to validity of a U.S. patent. Compare *Spence*, 261 F.2d at 246. In other words, absent clear and convincing evidence to the contrary, one of ordinary skill in the art is presumed to have sufficient skill and knowledge to practice Brookhart's polycyclopentene flash spinning polymerization process for forming fibers and foams having excellent heat resistance, dimensional stability, and chemical resistance. *G.S. Searle*, 358 F.3d at 920 (The presumption of validity can only be overcome by clear and convincing evidence.).

that Appellants have not challenged the Examiner's finding that Akki teaches, *inter alia*, conventional flash spinning conditions, i.e., the claimed spin agents (solvents) and the claimed concentration of the polymer employed, for flash spinning polymethylpentene. (*Compare* Ans. 6 with App. Br. 5-6 and Reply Br. 5-6). We find that Akki teaches that “[i]t is known that polymethylpentene has a higher melting point than either polyethylene or polypropylene (235° C. versus 140° C. and 165° C., respectively) and as such can provide a flashspun product usable at higher temperatures” (col. 2, ll. 50-65). We find that Akki, like Brookhart, teaches employing flash spinning to form polyolefin foams and fibers suitable at higher temperatures (Akki, col. 3, ll. 19-23 and col. 4, ll. 21-25). The preferred polycyclopentene taught by Brookhart, like polymethylpentene, has a desired higher melting property of between 240° C to 300° C. (*Compare* Brookhardt, col. 64, ll. 48-61 with Akki, col. 2, ll. 50-65).

Given the need to select appropriate flash spin conditions, e.g., suitable conventional spin agents (solvents) and polycyclopentene concentration, we concur with the Examiner that one of ordinary skill in the art would have been led to select optimum or useful conventional spin agents and polymer concentrations, such as those claimed, in Brookhardt's polycyclopentene flash spinning polymerization process, with a reasonable expectation of successfully forming fibers or foams having the above-mentioned desired properties.

Appellants contend that one of ordinary skill in the art would not have been led to employ the claimed spin agents since not all conventional spin agents are useful for flash spinning polycyclopentene (App. Br. 5-6 and

Reply Br. 5-6). In support of this contention, Appellants refer to their statement at page 2 of the Specification, which asserts that conventional spin agents useful for flash spinning polyethylene are not useful for flash spinning polycyclopentene (App. Br. 6 and Reply Br. 6).

We are not convinced that Appellants' assertion at page 2 of the Specification is sufficient to rebut the *prima facie* case of obviousness established by the Examiner. As indicated *supra*, it is well within the ambit of one of ordinary skill in the art to select conventional spin agents (solvents) appropriate for Brookhart's polycyclopentene flash spinning polymerization process via routine experimentation. In other words, one of ordinary skill in the art would have been led to identify and employ only those conventional spin agents (such as those claimed) suitable for carrying out Brookhart's polycyclopentene flash spinning polymerization process from those listed in Akki. This is especially true in this case since the conventional spin agents listed by Akki are said to have highly desirable properties, i.e., environmentally friendly low ozone depletion and safer non-flammable properties (Akki, col. 1, ll. 60-63, App. Br. 5 and Reply Br. 5). On this record, Appellants simply have not demonstrated the nature of flash spinning polymerization to be so unpredictable that one of ordinary skill in the art would not have been able to choose the claimed spin agents (solvents) from those known via routine experimentation.

ORDER

The decision of the Examiner is affirmed.

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TIME PERIOD

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

AFFIRMED

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