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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BAYER MATERIALSCIENCE LLC

Appeal 2007-2906
Application 10/295,315
Technology Center 1700

Decided: 8 August 2007

Before RICHARD E. SCHAFER, ADRIENE LEPIANE HANLON, and
RICHARD TORCZON, *Administrative Patent Judges*.

TORCZON, *Administrative Patent Judge*.

DECISION ON APPEAL

The claims on appeal relate broadly to rigid foams for insulation. The examiner has rejected claims 1-8, all of the pending claims, under 35 U.S.C. § 103. The appellant (Bayer) seeks review of the rejection. We affirm.

BACKGROUND

The claims

Bayer has opted not to delineate separate groups of claims for separate treatment in its arguments as provided by rule. Hence, we treat the claims as

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standing or falling together and select one claim to represent the group.¹

Claims 1-5 are directed to processes for making foam using specific blowing-agent mixtures, claims 6 and 7 are directed to the blowing-agent compositions, and claim 8 is directed to a foam produced by the process. Since blowing-agent compositions are common to all three groups, we select independent claim 6 for our analysis.

Claim 6 defines the invention as follows:²

6. A blowing agent composition comprising
 - a) from about 5 to about 50 parts by weight of HFC-134a and
 - b) from about 50 to about 95 parts by weight of HFC-245fa.

A claim before the Board is ordinarily given the broadest construction consistent with the specification.³ Claim 6 defines a composition using the transitional term "comprising", which opens the composition to the inclusion of components other than the two listed.⁴ Claim 6, however, lists minimums for the two components (about 5 and about 50 parts by weight, respectively) so the added components may not exceed about 45 parts by weight. Finally, use of "about" to qualify each of the numerical values indicates that the ranges in claim 6 should not be limited to exact end-points.⁵

¹ 37 C.F.R. § 41.37(c)(1)(vii). The rule permits the Board rather than the appellant to choose the representative claim; otherwise, an appellant could select the narrowest claim to represent the group.

² Appeal Brief (Br.) 10 (Claims Appendix).

³ *In re Etter*, 756 F.2d 852, 858-59, 225 USPQ 1, 5-6 (Fed. Cir. 1985) (en banc).

⁴ *AFG Indus., Inc. v. Cardinal IG Co.*, 239 F.3d 1239, 1245, 57 USPQ2d 1776, 1780 (Fed. Cir. 2001).

⁵ *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1954 (Fed. Cir. 2005).

The rejection

The examiner has rejected all claims as having been obvious to those having ordinary skill in the art in view of the Takeyasu patent.⁶ In analyzing obviousness, the scope and content of the prior art must be determined, the differences between the prior art and the claims ascertained, and the ordinary level of skill in the art resolved. Objective evidence of the circumstances surrounding the origin of the claimed subject matter (so-called secondary considerations) may also be relevant. Such secondary considerations guard against the employment of impermissible hindsight.⁷

Scope and content of the prior art

The Takeyasu patent is directed to methods of producing a foamed synthetic resin using a specific foaming agent.⁸ The invention is characterized by the use of HFC-245fa and HFC-134a in combination.⁹ Takeyasu's weight percentage of HFC-134a and HFC-245fa is preferably 1-80 and 20-99, respectively, and more preferably 1-60 and 40-99, respectively.¹⁰ There is substantial overlap in the ranges claimed:

in parts by weight	Claim 6	Takeyasu more preferred
HFC-134a	5-50	1-60
HFC-245fa	50-95	40-99

⁶ Hiromitsu Takeyasu et al., *Method for producing foamed synthetic resin*, U.S. Patent 6,043,291 (issued 28 March 2000) (Takeyasu).

⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 17, 36 (1966), *cited with approval in KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007).

⁸ Takeyasu 1:4-7.

⁹ Takeyasu 2:24-25.

¹⁰ Takeyasu 2:41-42.

Takeyasu explains that these two components may be used by themselves or in further combination with other foaming agents.¹¹

Takeyasu's Table 2 shows four foaming compositions within the scope of claim 6 (H, I, J, and M) and three outside the scope of claim 6 (K, L, and N). Table 3 shows results using compositions H-J and M, all of which are "good". Table 4 shows results using compositions K, L, and N, which the table describes as the "comparative examples". All of the comparative examples are "no good" in at least one respect.¹²

Differences between the prior art and the claim

Although the component ranges are similar, they are not identical. Takeyasu's ranges are broader: by 4 parts at the outsides of the ranges and 10 parts in the middle. Thus, while in claim 6 the amount of HFC-134a can never exceed the amount of HFC-245fa, at one extreme of Takeyasu's ranges there can be 20 parts more HFC-134a than HFC-245fa.

Bayer urges other differences. For instance, Bayer argues Takeyasu does not teach "that the blowing agent mixture be used in quantities from 5 to 20 wt% base on the total foam-forming mixture."¹³ Bayer does not identify the source of this limitation. We discern no such limitation in claim 6.

Bayer also argues that Takeyasu does not teach an "advantageous k-factor" or "a k-factor which [is] $\pm 5\%$ of the k-factor produced solely with

¹¹ Takeyasu 2:47-50.

¹² Takeyasu 7:20-8:64. For comparison, the blowing agents in both of Bayer's comparative examples use either HFC-134a alone or HFC-245fa alone and are thus outside Takeyasu's preferred ranges. See Specification (Spec.) 14, Table 1, columns 1 and 4.

¹³ Br. 3.

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HFC-245fa".¹⁴ Again, Bayer does not identify the source of either limitation. Neither is present in claim 6.

Bayer argues that Takeyasu does not teach foam cell size.¹⁵ Again, Bayer does not identify the source of this limitation, which is not present in claim 6.

Ordinary level of skill in the art

We look to the evidence of record—the applicant's disclosure, the cited references, and any declaration testimony—in resolving the ordinary level of skill in the art.¹⁶ From the Takeyasu patent, we find that persons having ordinary skill in the art knew to make and use foaming agents of HFC-134a and HFC-245fa, either exclusively or in combination with other foaming agents, in the ranges of weight-percentages stated in claim 6.¹⁷ From Bayer's specification, which discusses the Takeyasu patent, we find that such persons would know that Takeyasu's foaming agent composition would have lower k-factors (better insulation value) than those made with HFC-134a alone.¹⁸ Bayer has submitted the declaration of Dr. Steven L. Schilling, who is named as an inventor for the application on appeal, but his testimony does not address the level of skill directly.¹⁹

¹⁴ Br. 4.

¹⁵ Br. 5.

¹⁶ *Ex parte Jud*, 2006 WL 4080053 at *2 (BPAI) (rehearing with expanded panel).

¹⁷ Takeyasu 2:24-50. We must presume the Takeyasu patent to have been enabled. *Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1354, 65 USPQ2d 1385, 1416 (Fed. Cir. 2003).

¹⁸ Spec. 2:5-26.

¹⁹ Schilling declaration (Schilling), Evidence Appendix to the Appeal Brief.

Secondary considerations

Bayer argues that secondary considerations, specifically unexpectedly good results, militate against a conclusion of obviousness, citing the testimony of Dr. Schilling.²⁰ Dr. Schilling explains that the five foams in Table 1 attached to his declaration were prepared under his direction. He states that the graph attached to his declaration compares the k-factors of the foams against a predicted k-factor value for each foam.²¹ The prediction curve is simply a linear extrapolation of the comparative values, both of which are outside the ranges of Takeyasu and claim 6, which in a closer case might raise serious questions about the methodology employed.

All three of the foams not identified as comparative examples show k-factors superior to the predicted values.²² Foams 2 and 3 appear to be the same as Foams 2 and 3 of the specification, which were discussed above. Both of these Foams use HFC-134a/HFC-245fa ranges within both Takeyasu's preferred ranges and the ranges in claim 6.

The examiner argues that Bayer has not provided comparative data outside the scope of Bayer's claims (but presumably inside the scope of Takeyasu's more preferred ranges).²³ Bayer replies that the examiner is wrong.²⁴ Even discounting the comparative examples (which are not within the ranges of either claim 6 or Takeyasu's more preferred ranges), the examiner is wrong. Schilling's Foam 4 uses 12.83 parts by weight HFC-

²⁰ Br. 4-7.

²¹ Schilling 2.

²² Schilling 5 (graph).

²³ Examiner's Answer 4.

²⁴ Reply 2.

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134a and 8.56 parts by weight of HFC-245fa,²⁵ which translates into weight percentages of 59.98 and 40.02, respectively.²⁶ Intriguingly, the blowing agent of Foam 4 is well outside the scope of claim 6 and almost exactly at the limits of Takeyasu's more preferred range, yet Schilling's graph shows Foam 4 as having a better than predicted k-factor. Thus, although the examiner was wrong about Schilling's fourth example, the error is harmless because the data is more consistent with the examiner's position than with Bayer's.

The limited data that Bayer has provided shows better k-factors than Dr. Schilling would have predicted for Takeyasu's more preferred compositions, whether those compositions are within the scope of claim 6 or not. Thus, on this record, improved k-factors cannot be said to distinguish the composition of claim 6 from Takeyasu's more preferred compositions.

ANALYSIS

The subject matter of claim 6 would have been obvious

When the claimed invention falls within a range disclosed in the prior art, there is a presumption of obviousness. The presumption may be rebutted on a showing that (1) the prior art taught away from the claimed invention or (2) there are new and unexpected results relative to the prior art.²⁷ Optimization within the suggested range is obvious unless the results are unexpectedly good. Moreover, the showing of unexpectedly good

²⁵ Schilling 4 (Table 1).

²⁶ $12.83/(12.83 + 8.56)$ and $8.56/(12.83 + 8.56)$, respectively.

²⁷ *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1322, 73 USPQ2d 1225, 1228 (Fed. Cir. 2004).

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results must be commensurate with the range now claimed.²⁸ Unexpected results must be based on comparison with the closest prior art and must represent a difference in kind rather than a difference of degree.²⁹

There is no teaching away. Takeyasu's preferred embodiment describes the same components in ranges encompassing those now claimed. Takeyasu's more preferred embodiment describes encompassing ranges that are even closer in scope to those claimed. We find that Takeyasu would have directed those in the art toward the ranges now claimed.³⁰

The results Bayer has provided regarding k-factors are not unexpected. The few data points provided are uniformly good for compositions within the scope of Takeyasu's more preferred ranges, whether or not they are also within the scope of claim 6. They do not differ in degree, much less in kind, from those obtained using the prior art. There is no evidence of sharp break-points in the data when moving from Takeyasu's broader more preferred ranges into the narrower ranges of claim 6. Thus, one could not even say that the claimed ranges have been optimized compared to the prior art. Expected results support a conclusion of obviousness rather than the converse.³¹

²⁸ *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1383 (Fed. Cir. 2003).

²⁹ *Harris*, 409 F.3d at 1344, 74 USPQ2d at 1955.

³⁰ *Cf. Harris*, 409 F.3d at 1343, 74 USPQ2d at 1954 (differences in overlapping prior art ranges and claimed ranges do not constitute a teaching away).

³¹ *KSR Int'l*, 127 S. Ct. at 1740, 82 USPQ2d at 1395-96.

Other claims and limitations

It is an abuse of process for an appellant to present limitations without context in the hope that the tribunal will string them together in a winning combination.³² Had Bayer wished to argue the patentability of any of its claims separately, the Board rule defining appeal briefs³³ provides clear guidance on how to do so. The rule requires specific identification of claims and arguments under separate subheadings. The rule also clearly warns that failure to follow the rule will lead to waivers. Bayer did not use separate headings or even identify separate claims for consideration in its brief. If the rule is to have any meaning at all, we must not step in and make out the case that Bayer chose not to make on its own.³⁴

CONCLUSION

The subject matter of claim 6 would have been obvious to a person having ordinary skill in the art at the time the application on appeal was filed. The claims stand or fall together so the rejection of claims 1-8 is—

AFFIRMED

³² Even if we did associate the argued limitations with a claim or claims, we would still have to guess how Bayer intended the claims to be separately grouped. The Board cannot act as Bayer's counsel to figure out what would be the best outcome for Bayer and group the claims accordingly. Such a practice would be contrary to public interest and the orderly administration of appeals.

³³ § 41.37(c)(1)(vii).

³⁴ Since Bayer is represented by a registered patent practitioner, we need not and do not reach the problem of the unsophisticated pro se inventor.

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