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HEINCER, LIAM J	

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOHN E. HAYES,
ALBERT MAGNOTTA, and NIGEL BARKSBY

Appeal 2011-006402
Application 11/546,606
Technology Center 1700

Before PETER F. KRATZ, CATHERINE Q. TIMM, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

KRATZ, *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 1-14. We have jurisdiction pursuant to 35 U.S.C. § 6.

Appellants' claimed invention is directed to a reaction system for preparing a fiber reinforced composite and a method of preparing same.

Claims 1 and 8 are illustrative and reproduced below:

> 1. A reaction system for the preparation of a fiber reinforced composite by a pultrusion process comprising:
>
> continuous fiber reinforcing material; and
>
> a polyurethane formulation comprising,
>
> a polyisocyanate component containing at least one polyisocyanate, and
>
> an isocyanate-reactive component containing at least one polymer polyol ("PMPO")
>
> which polyurethane formulation undergoes essentially no reaction while in an impregnation die.
>
> 8. A pultrusion process for preparing a fiber reinforced polyurethane composite, the process comprising:
>
> continuously pulling a roving or tow of continuous fiber reinforcing material successively through an impregnation chamber and a die:
>
> continuously feeding a polyurethane formulation comprising a polyisocyanate component containing at least one polyisocyanate, and an isocyanate-reactive component containing at least one polymer polyol ("PMPO") to the impregnation chamber which polyurethane formulation undergoes essentially no reaction while in the impregnation die;
>
> contacting the fiber reinforcing material With the mixture in the impregnation chamber such that substantially complete wetting of the material by the mixture occurs;
>
> directing the fiber reinforcing material through a die heated to reaction temperature to form a solid composite; and

drawing the composite from the die.

The Examiner relies on the following prior art references as evidence in rejecting the appealed claims:

Kuyzin	US 5,204,170	Apr. 20, 1993
Ishida	US 5,294,461	Mar. 15, 1994
Joshi et al.	US 2004/0106726 A1	June 3, 2004

Claims 1-5, 7-12, and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida in view of Kuyzin. Claims 6 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida in view of Kuyzin and Joshi.[1]

We adopt the Examiner's fact finding as our own and we affirm the stated rejections for substantially the reasons set forth by the Examiner in the Answer. We offer the following for emphasis.

Concerning the Examiner's first and third started rejections (consolidated above), Appellants argue the rejected system claims 1-5, and 7 and method claims 8-12 and 14, each together as a group, but present substantially the same basic arguments with respect to the system and method claims (App. Br. 4-7 and 10-14). We select claims 1 and 8 as the respective representative claims on which we decide this appeal as to the Examiner's separate rejections over Ishida and Kuyzin. We agree with the Examiner that it would have been obvious for one of ordinary skill in the art to employ the polymer polyol of Kuyzin as at least a part of the isocyanate reactive component of Ishida based on the combined teachings of the

[1] While the Examiner presented the above-noted rejections separately as to reaction system (product) claims 1-7 and method claims 8-14, we combine them as a matter of convenience.

references and for reasons expressed by the Examiner (Ans. 4 and 6). This is so not withstanding Appellants' arguments presented in the Appeal Brief. In this regard, Appellants' arguments are amply refuted as being unavailing for reasons expressed by the Examiner in rebuttal (*id.* at 7-11).

A common thread running through the arguments set forth in the Appeal Brief and the Reply Brief is the contention that both Ishida and Kuyzin present fast curing systems and are not concerned with or directed to providing a reaction system (composition) or a method that limits or avoids polymerization reaction such that essentially no reaction occurs in an impregnation die/chamber. In so doing, Appellants seem to have conflated the reaction die 17 of Ishida with their impregnation die and/or chamber (Reply Br. 1; claims 1 and 8). In this regard, chamber 28 of Ishida corresponds to Appellants' injection die or chamber of claims 1 and 8 whereas die 27 of Ishida corresponds to the die heated to a reaction temperature of Appellants' claim 8. Ishida teaches that reactions in the impregnation chamber 28 are minimized or avoided (col. 4, ll. 17-21; col. 6, ll. 10-51; col. 7, ll. 9-22).

Appellants have not distinguished the claimed subject matter from that suggested by Ishida and Kuyzin based on a compositional limitation that is different from that suggested by the applied references and which has been established as having a curing time that is longer than would have been expected by one of ordinary skill in the art based on the teachings of the applied references. In this regard, we note that Ishida discloses the use of a polyurethane resin precursor for pulling the fibers through in forming a fiber reinforced composite (col. 3, ll. 36-43; col. 4, ll. 1-8; col. 8, ll. 24-32) and Kuyzin teaches the use of polymer polyol as an isocyanate-reactive

component in forming such a composite (col. 3, ll. 20-24; col. 6, ll. 22-33; col. 9, ll. 46-55). Representative claims 1 and 8 do not specify any particular amount of polymer polyol being present in the isocyanate-reactive component employed. Moreover, Appellants' assertions to the effect that there is a lack of any disclosure in Kuyzin that would have led one of ordinary skill in the art to employ the polymer polyol thereof in Ishida lacks merit for reasons indicated by the Examiner (Ans. 4 and 6-11).

On this record, we sustain the Examiner's obviousness rejections pertaining to claims 1-5, 7-12, and 14.

Concerning dependent claims 6 and 13, the Examiner additionally relies on Joshi to teach or suggest the use of an isocyanate- reactive component including cross-linkers in Ishida based on the teachings of Joshi with respect to the increased mechanical strength to be expected from including such a component in forming the product of Ishida (*id.* at 5 and 7). Appellants' arguments do not directly address the Examiner's rationale for including a cross-linker in the isocyanate-reactive component of Ishida (App. Br. 7-9 and 14-16: Reply Br. 3). Rather, Appellants assert that the applied references, as a whole, would not have suggested the proposed modification while focusing on the use of the polymer polyol addition discussed above. For reasons set forth by the Examiner, we are not persuaded of the non-obviousness of dependent claims 6 or 13 based on the additional arguments presented with respect to the Examiner's rejection of these claims (Ans. 9-10).

It follows that we shall sustain the Examiner's obviousness rejections of claims 6 and 13, on this appeal record.

ORDER

The Examiner's decision to reject the appealed claims 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).

AFFIRMED

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