

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* BRUCE F. DOUGLAS and JOHN B. LETTS

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Appeal 2007-1260<sup>1</sup>  
Application 10/468,487  
Technology Center 1700

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Decided: February 29, 2008

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Before PETER F. KRATZ, JEFFREY T. SMITH, and  
LINDA M. GAUDETTE, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Primary Examiner's final rejection of claims 1, 3, and 5-29.<sup>2</sup> We have jurisdiction pursuant to 35 U.S.C. § 6.

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<sup>1</sup> An oral hearing was held on October 23, 2007.

According to Appellants, the invention is directed to a method for manufacturing polyurethane and polyisocyanurate foams, the method comprising charging at least one blowing agent in a polyol component to an in-line continuous mixer and contacting a blowing agent and polyol mixture with an isocyanate component. Claim 1 is representative of the invention and is reproduced below:

1. A method for manufacturing polyurethane and polyisocyanurate foams, the method comprises the steps of:
  - charging at least one blowing agent and a polyol component to an in-line continuous mixer at a pressure of less than about 3,400 kPa, wherein the at least one blowing agent and the polyol component are continuously charged from separate streams;
  - mixing the at least one blowing agent and the polyol component in the in-line continuous mixer to dissolve or emulsify the blowing agent in the polyol component and thereby provide a B-side stream;
  - contacting the B-side stream with an isocyanate component at a dispensing head to provide a foam formulation; and
  - dispensing the foam formulation from the dispensing head, wherein the residence time of the B-side stream, from its exit from the in-line continuous mixer to its exit from the dispensing head as part of the foam formulation, is less than about 5 minutes.

The Examiner has relied on the following prior art reference as evidence of unpatentability:

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<sup>2</sup> We note that Appellants have not included claims 27-29 in the statement of the claims on appeal. (*See Br. 1-3*). However, Appellants have included arguments for claim 27 in the discussion of the rejected claims. (*Br. 6*). The Examiner includes the claims 27-29 in the stated rejection in the Answer. (*Ans. 3*).

Fishback 5,837,742 Nov. 17, 1998

### ISSUES ON APPEAL

Claims 1, 3, and 5-29 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Fishback (Ans. 3-5).<sup>3</sup>

Appellants contend the Examiner has mischaracterized the claimed invention and that Fishback does not teach or suggest introducing separate streams of components within an in-line mixer or bringing them together within a mixer. Appellants contend that “one of skill in the art would understand that the remixing or agitation of the polyol/blowing agent blend within the in-line mixer taught by Fishback would occur at pressures above 3,400 kPa” (Br. 4).

The Examiner contends that Fishback describes the manufacturing of polyisocyanurate foams wherein one stream comprises the isocyanate compound and a separate stream comprises a polyol and a blowing agent (Ans. 3). Regarding the mixing pressure, the Examiner contends that the present record does not establish a distinction between the pressure utilized in Fishback and the claimed invention (Ans. 4).

Accordingly, the issues presented on the record in this appeal are as follow: Does Fishback disclose, teach, or suggest methods for manufacturing polyisocyanurate foams wherein stream A comprises the isocyanate compound and stream B comprises a polyol and a blowing agent? Would a person of ordinary skill in the art would have been led to employ

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<sup>3</sup> Appellants have not presented separate arguments for claims 5, 6, 8-11, 14-26, 28, and 29 on appeal (See Br. generally). These claims will stand or fall with the subject matter of claim 1. We will address Appellants’ arguments for claims 3, 7, 12, 13, and 27.

the claimed mixing conditions, and if so, are Appellants' arguments sufficient to rebut any prima facie case of obviousness established by the Examiner?

We determine that the Examiner has established a prima facie case of obviousness in view of the reference evidence, which prima facie case has not been adequately rebutted by Appellants' arguments. Therefore, we AFFIRM the rejection presented in this appeal essentially for the reasons stated in the Answer, as well as those reasons set forth below.

#### OPINION

We determine the following factual findings from the record in this appeal:

Fishback describes the manufacturing of polyisocyanurate based foams wherein an isocyanate compound is mixed with a polyol compound combined with a hydrocarbon blowing agent premix. Fishback discloses the blowing agent is mixed into the polyol composition prior to reacting the foaming reaction (col. 8, ll. 64-68).

Appellants acknowledge that Fishback discloses the polyol component and the blowing agent are premixed in a tank using a drill press that is subsequently gravity fed into a day tank prior to pumping the mixture into an impingement mixhead (Br. 3-4). Appellants contend that Fishback is silent on the exact pressure of the agitation within the in-line mixer (Br. 4).

Regarding the teachings of Fishback, Appellants (Br. 6) state:

Notably, the mixing of blowing agent and polyol in Fishback occurs in a premix tank and is thereafter transferred to a day tank for storage until needed. One skilled in the art would know that such prior art mixing methods occur at ambient pressures.

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. *See Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). “[A]nalysis [of whether the subject matter of a claim is 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), quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); *see also In re Bozek*, 416 F.2d 1385, 1390 (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.’”).

Applying the preceding legal principles to the factual findings in the record of this appeal, we determine that the Examiner has established a *prima facie* case of obviousness, which case has not been adequately rebutted by Appellants’ arguments. As shown by the factual findings above, we determine that Fishback clearly describes manufacturing polyisocyanurate based foams wherein an isocyanate compound is mixed with a polyol compound combined with blowing agent. Fishback does not identify specific pressure requirements for pre-mixing the polyol compound with a blowing agent. As such, a person of ordinary skill in the art would

have reasonably expected that the polyol component and the blowing agent could have been mixed under appropriate pressure conditions. The claimed invention specifies charging blowing agent and a polyol component to an in-line continuous mixer at a pressure of less than about 3,400 kPa. This claim language includes all pressures below 3,400 kPa, including normal atmospheric pressure. Appellants have not directed us to evidence which establishes that remixing/agitation of a polyol compound with a blowing agent within an in-line mixer was known by persons of ordinary skill in the art to always occur at pressures above 3,400 kpa (*see Br. 4*). We determine that Fishback presents sufficient evidence for a person of ordinary skill in the art to perform the method of the claimed invention. Therefore, we determine that it would have been well within the ordinary skill in this art to perform the method of producing polyisocyanurate based foams comprising contacting an isocyanate compound containing stream with a stream comprising a polyol and a blowing agent.

Appellants contend that the claimed invention is patentable because the blowing agent and the polyol component are continuously charged from separate streams to form the reaction stream not including a day tank (Br. 4). We do not agree. The claimed invention does not exclude continuously charging the individual components into a separate tank prior to mixing with the stream comprising the isocyanate component. In fact, the claimed invention requires the blowing agent and the polyol component to be combined to formulate the B-side stream which is subsequently mixed with the stream comprising the isocyanate component.

Appellants' arguments regarding claims 7, 12, 13, and 27 are not persuasive. As to claims 7, 12, and 13, Appellants identify the specific characteristic of the in-line mixer and comment that Fishback does not provide the details of the mixer utilized. (Br. 5). These arguments are not persuasive because Appellants have not established the patentable distinction of the characteristics of the mixer from those known in the art. Regarding claim 27, Appellants identify the pressure range of 100kPa to about 860kPa. (Br. 6). This range encompasses ambient conditions.

We note Appellants have not relied upon evidence of unexpected results in rebuttal to the Examiner's prima facie case of obviousness.

For the foregoing reasons and those stated in the Answer, we affirm all grounds of rejection presented in this appeal.

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

tf/lS

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