UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK W. MCGLOTHLIN,
ERIC SCHMID AND
BRIAN P. WATSCHKE

Appeal 2007-2135
Application 10/269,840
Technology Center 1700

Decided: September 11, 2007

Before CHUNG K. PAK, THOMAS A. WALTZ, and
CATHERINE Q. TIMM, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* WALTZ.

Opinion Dissenting filed by *Administrative Patent Judge* TIMM.

WALTZ*, Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Primary Examiner's rejection of claims 1 through 34. Claims 35-38, the only other claims in this application, stand withdrawn from consideration by

the Examiner as directed to a non-elected invention (Br. 3). Although the rejection appealed from was a non-final rejection, we have jurisdiction since the claims have been twice presented and rejected. *See Ex parte Lemoine,* 46 USPQ2d 1420, 1423 (BPAI 1994); 35 U.S.C. §§ 6(b) and 134.

According to Appellants, the invention is directed to a method of forming a thin-walled rubber article using four steps, where the first step is forming an aqueous latex from vulcanizable rubber, a sulfur-containing vulcanizing agent, a crosslinking agent that forms carbon-carbon crosslinks, and water (Br. 3). Independent claim 1 is illustrative of the invention and a copy of this claim is reproduced below:

1. A method for forming a thin-walled rubber article, said method comprising:

> (a) forming an aqueous latex comprising vulcanizable rubber, a sulfur-containing vulcanizing agent, a crosslinking agent that forms carbon-carbon crosslinks, and water, said latex being devoid of vulcanization accelerators that contain secondary amine groups; and
>
> (b) forming said aqueous latex into said thin-walled rubber article by:
>
> > (i) forming said aqueous latex into a film,
> >
> > (ii) evaporating water from said film, and
> >
> > (iii) subjecting said vulcanizable rubber to vulcanization conditions either before step (i), between steps (i) and (ii), after step (ii), or both before step (i) and after step (ii).

The Examiner has relied on the following prior art references as evidence of obviousness:

Noecker (‘320)	US 6,051,320	Apr. 18, 2000

Früh	US 6,136,987	Oct. 24, 2000
McGlothlin	US 6,329,444 B1	Dec. 11, 2001
Noecker (‘552)	US 6,383,552 B1	May 07, 2002

ISSUES ON APPEAL

Claims 1-9 and 11-34 stand rejected under 35 U.S.C. § 103(a) as unpatentable over either of Noecker ‘320 or ‘552 in view of Früh (Answer 3).

Claim 10 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the references applied against claim 1 further in view of McGlothlin (Answer 5).

Appellants contend that the present invention, as well as the Noecker patents, relates to thin-walled products made from a latex, while Früh is directed to thick-walled products made from homogenous liquid rubber, and the teachings from one system cannot be applied to the other type of system (Br. 4-5).

Appellants contend that combining the Noecker patents with Früh is unwarranted, since the Noecker patents explicitly exclude sulfur while Früh includes sulfur (Br. 7; Reply Br. 1-2).

The Examiner contends that it would have been obvious to employ the sulfur and accelerator taught by Früh in the process of either primary reference (Answer 4). The Examiner agrees with Appellants that the Noecker patents “suggest not to use sulfur” but contends that this suggestion is because conventional accelerators used with sulfur generate undesired nitrosamines (*id.*). Therefore, the Examiner contends that given the accelerator taught by Früh, which accelerator does not generate nitrosamines, one of ordinary skill in this art “would have had no problem

using the sulfur and the accelerator" of Früh in the process disclosed by the primary references (*id.*).

Accordingly, the dispositive issue presented from the record in this appeal is whether the Examiner has properly combined the references by substituting the sulfur vulcanizing agent and accelerator of Früh in the process disclosed by the Noecker patents.[1]

We determine that the Examiner has not established a prima facie case of obviousness in view of the reference evidence. Therefore, we REVERSE both grounds of rejection present in this appeal essentially for the reasons stated in the Brief and Reply Brief, as well as those reasons set forth below.

OPINION

It is well settled that the initial burden of presenting a prima facie case of obviousness based on the disclosures of the applied prior art references rests with the Examiner. *See In re Oetiker,* 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Any analysis supporting obviousness should be made explicit and 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 Int'l Co. v. Teleflex, Inc.,* 127 S.Ct. 1727, 1739, 82 USPQ2d 1385, 1396 (2007). "When the legal conclusion [of obviousness] is not supported by facts, it cannot stand." *In re Warner,* 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967).

[1] Since the Examiner recognizes that Noecker '552 is "essentially cumulative" to the disclosure of Noecker '320 (Answer 3), we will limit our discussion to only Noecker '320. However, our remarks equally apply to Noecker '552.

As noted above, the Examiner attempts to provide reasons for the combination of Früh with Noecker '320 (Answer 4), but we find no factual basis for the Examiner's rationale that one of ordinary skill in the art would have employed the sulfur vulcanizing agent and accelerator taught by Früh in the sulfur-free method and system disclosed by Noecker '320. Contrary to the Examiner's rationale, Noecker '320 teaches that amines should be avoided in the latex composition to preclude the formation of nitrosamines and does not indicate that sulfur should be employed as a vulcanizing agent or for any other use. *See* Noecker '320, col. 3, ll. 35-51, where it is taught that nitrosamines are often generated from antioxidants or other amine compounds; and col. 5, ll. 7-11, where the reference teaches the use of a "non-amine antioxidizing agent" so that the latex contains substantially no nitrosamines. Furthermore, Noecker '320 teaches that all amines should be eliminated from the latex formulation so that undesirable amines are not in the finished product (col. 7, ll. 59-61). These teachings agree with Früh, who more narrowly teaches that secondary amines should be avoided since they form nitrosamines due to the interaction of the secondary amines with the environment (col. 1, ll. 37-42).

We determine that Noecker '320 teaches sulfur-free rubber latex compositions with the following explanation (col. 1, l. 61-col. 2, l. 8):

> Although products formed from such sulphur-cured natural rubber exhibits[sic] some very good qualities, including strength, toughness, elasticity, etc. and are used very effectively in many applications, there are some areas or applications where compatibility problems arise due to the chemicals incorporated into the rubber which react undesirably with foreign materials contacted by products formed from the rubber during the products' subsequent use. Particularly, the sulphur,

> sulphur compounds, dithiocarbamate compounds, zinc and its compounds which are present on and/or in the surfaces of products formed from the rubber may react with foreign materials contacted during use of the products, resulting in contamination, fouling, spoilage or discoloration of the rubber products or of the materials contacted therewith (either directly or indirectly).

Accordingly, contrary to the dissenting opinion, the whole tenor of the Noecker '320 disclosure is to sulfur-free latex compositions. As a completely separate problem, Noecker '320 also desires latex compositions which are free of other undesirable chemicals, including amines which form nitrosamines (col. 4, ll. 44-58; col. 5, ll. 7-16; col. 5, ll. 51-55; col. 7, ll. 59-61; col. 8, ll. 22-26; col. 9, l. 55; and col. 11, ll. 45-56). We determine that the Examiner has not met the initial burden of presenting a prima facie case of obviousness. We also determine that the Examiner has not identified any convincing reason why one of ordinary skill in this art would have substituted the sulfur vulcanizing agent and amine accelerator taught by Früh into the sulfur-free, amine-free latex composition in the method disclosed by Noecker '320. Therefore, we cannot sustain the rejection of claims 1-9 and 11-34 under § 103 over either Noecker patent in view of Früh.

With regard to the rejection of claim 10, we determine that the Examiner has applied McGlothlin for the teaching of using protein-free polyisoprene in the initial rubber latex composition (Answer 5). Therefore, we determine that McGlothlin does not remedy the deficiency noted above.

For the foregoing reasons, the decision of the Examiner is reversed.

REVERSED

TIMM, *Administrative Patent Judge*, dissenting

I respectfully dissent from the decision of my colleagues. In my view, Appellants have not shown that the Examiner reversibly erred. Considering the prior art from the viewpoint of one of ordinary skill in the rubber processing art, a preponderance of the evidence supports the Examiner's conclusion that it would have been obvious to one of ordinary skill in the art to form a thin-walled rubber article as claimed in claim 1, the only claim at issue in this appeal.

While my colleagues and the Appellants are correct that Noecker's invention is directed to a vulcanization system that does not use sulfur, and the conventional accelerators normally used with sulfur, a reference can be used as prior art for all it teaches. Use of a patent as a reference is not limited to what the patentee describes as their own invention. *In re Heck*, 699 F.2d 1331, 1333, 216 USPQ 1038, 1039 (Fed. Cir. 1983) (*quoting In re Lemelson*, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)).

Noecker teaches the following:

> Rubber is a very common compound. It is available in many different compositions and forms such as rubber latex. In conventional processes for forming rubber, or for forming products from rubber, rubber is cured or vulcanized so as to join the molecules within the rubber composition together giving the rubber composition desired strength and toughness. Most typically sulphur and sulphur donating compounds are used as the primary curing or vulcanizing agents.

(Noecker, col. 1, ll. 24-32).

Sulphur is not normally used alone. The typical sulphur-curing system uses, along with the sulphur-based primary curing agent,

vulcanization accelerators, such as zinc thiocarbamate and sodium diethylcarbamate (Fruh, col. 1, ll. 13-35; Noecker, col. 1, ll. 33-46). When those of ordinary skill in the art speak of sulphur-cured natural rubber, they are referring to a system including accelerators such as the above carbamate amine compounds.

"Although products formed from such sulphur-cured natural rubber exhibits some very good qualities, including strength, toughness, elasticity, etc. and are used very effectively in many applications, there are some areas or applications where compatibility problems arise due to the chemicals incorporated into the rubber which react undesirably with foreign materials contacted by products formed from the rubber during the products' subsequent use." (Noecker, col. 1, l. 61 to col. 2, l. 1.) For instance, chemicals in latex examination gloves may react with dental impression materials preventing proper curing of the material (Noecker, col. 2, ll. 21-53).

According to Noecker,

> Another problem encountered with conventional sulphur cured, natural rubber latex products are the nitrosamines contained therein. The nitrosamines, which are often generated from the *antioxidants* used in natural rubber compositions or *by other amine compounds* used in the rubber latex, are believed to be carcinogenic. Hence it is undesirable to use the conventional compounds having a high nitrosamine content, where products formed from the rubber composition are likely to be contacted by humans, such as with their skin, body fluids, or in their mouths or other body cavities. For this reason, some natural rubber products namely baby pacifier nipples have been formed from substantially nitrosamine-free rubber compositions in which oxygen-donating curing agents such as peroxides are

> used *instead of conventional sulphur and carbamate curing agents*.
>
> Such known nitrosamine-free compositions are useful for products such as pacifier nipples because the products have a relatively large wall thickness to give the products sufficient strength and elasticity, and because the increased tackiness of products resulting from the oxygen-donating curing agents is acceptable and even desirable for the products. On the other hand, such nitrosamine-free compositions have not been used for thin-walled rubber latex products such as gloves, dental dams, catheters, penrosed drains, etc. because the resulting thin walled products have insufficient strength characteristics including tear strength and tensile strength, and because the increased tackiness of the products causes significant problems for handling, storing and donning the products. The reduced strength characteristics and increased tackiness of the oxygen cured rubber latex compositions results from a decreased cross linking density of the compositions in comparison to that of conventional sulfur cured compositions.

(Noecker, col. 3, l. 36 to col. 4, l. 2 (emphasis added)). Fruh also identifies the problem of nitrosamine generation. According to Noecker, conventional accelerators such as dithiocarbamates form secondary amines which, in turn, form nitrosamines, carcinogenic compounds (Fruh, col. 1, ll. 13-42).

Noecker overcomes the problem of nitrosamine generation from the amine-containing accelerator by using an oxygen-curing system instead of a sulphur-curing system (Noecker, col. 4, ll. 61-63). In order to overcome the deficiency in strength resulting from using the oxygen-curing system, a strength-enhancing agent is used (Noecker, col. 7, l. 62 to col. 8, l. 17). Noecker also implements a separate solution for the problem of generation of nitrosamines from amine-antioxidants: The use of non-amine

antioxidants or an antioxidant substitute such as a microcrystalline wax (Noecker, col. 5, ll. 7-10; col. 8, ll. 18-49).

One of the problems addressed by Noecker is the problem of formation of nitrosamines by the amine-containing constitutents in the conventional sulphur-curing system, constitutents such as carbamate accelerators. Noecker addresses this problem by eliminating the amine-containing constituents, and to totally eliminate these amine sources, Noecker turns to an oxygen-curing system. The problem with the oxygen-curing system is that it results in a lower strength product and, therefore, Noecker must add a strength-enhancing agent.

Fruh describes an alternate solution to the problem of nitrosamine formation by the amine-generating accelerators used in the sulphur-curing system: Use a sulphur-curing system with an accelerator of a different kind, an arylguanidinium xanthogenate (Fruh, col. 1, ll. 45-54).

It follows from the above prior art disclosures that it would have been obvious to one of ordinary skill in the art to form thin-film products such as latex gloves using the sulphur-curing system, but with the accelerator of Fruh when desiring to eliminate nitrosamine formation arising from the accelerator. One would not then require the strength-enhancing agent of Noecker. One of the ways in which a claim's subject matter can be proved obvious is by establishing that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the claims. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742, 82 USPQ2d 1385, 1397 (2007).

With regard to the obviousness of the use of Fruh's accelerator to form a thin-walled latex rubber product, Noecker indicates that it was known to form thin-walled latex rubber products using sulphur-curing systems (Noecker, col. 3, ll. 36-65). Those systems use accelerators such as zinc dithiocarbamate and sodium diethylcarbamate (Noecker, col. 1, ll. 37-45). The accelerator of Fruh is intended to replace accelerators such as the dithiocarbamates (Fruh, col. 1, ll. 13-20). The evidence supports a finding that one of ordinary skill in the art would have had a reasonable expectation that the Fruh accelerator would successfully accelerate the sulphur vulcanization of latex rubber in the formation of a film-thin latex product. We note that the arylguanidinium xanthogenates are described by Fruh as ultra-accelerators for rubber vulcanization in general, Fruh does not limit the accelerator use to any specific type of rubber vulcanization (Fruh, col. 1, ll. 51-54).

For the above reasons, I would sustain the rejections, and affirm the decision of the Examiner.

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