

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* THOMAS SCHOLL, HERMANN-JOSEF, STEFAN KELBCH  
and HANS-WILHELM ENGELS

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Appeal No. 1996-2357  
Application 08/124,617<sup>1</sup>

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ON BRIEF

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Before KIMLIN, WARREN and OWENS, *Administrative Patent Judges*.  
OWENS, *Administrative Patent Judge*.

*DECISION ON APPEAL*

This is an appeal from the examiner's final rejection of claims 3-10, which are all of the claims remaining in the application.

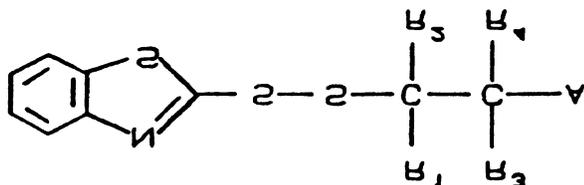
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<sup>1</sup> Application for patent filed September 22, 1993.

*THE INVENTION*

Appellants claim a vulcanizable rubber composition containing a vulcanization accelerator having a recited formula. Claim 3 is illustrative and reads as follows:

3. A vulcanizable rubber composition containing a vulcanization accelerator corresponding to the formula



where A represents OH, OCOR<sup>5</sup>, OR<sup>5</sup>, COOR<sup>5</sup>, NR<sup>6</sup>R<sup>7</sup> or CN, wherein R<sup>5</sup>, R<sup>6</sup> and R<sup>7</sup> are the same or different and represent hydrogen, or C<sub>1</sub> - C<sub>12</sub> alkyl or C<sub>6</sub> - C<sub>10</sub> aryl radicals, and

R<sub>1</sub> to R<sub>4</sub> are the same or different and represent H, C<sub>1</sub> - C<sub>12</sub> alkyl, C<sub>6</sub> - C<sub>10</sub> aryl, CH<sub>2</sub>OR<sup>5</sup>, CH<sub>2</sub>COOR<sup>5</sup> and CH<sub>2</sub>OH, or

wherein the R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> radicals are bonded to one or more carbocyclic rings with 3 to 7 C atoms.

*THE REFERENCES*

Bögemann	2,026,863	Jan. 7, 1936
Kleiman	2,510,893	Jun. 6, 1950
Boustany et al. (Boustany)	3,770,707	Nov. 6, 1973
Fujii et al. (Fujii)	4,258,193	Mar. 24, 1981

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*THE REJECTIONS*

Claims 3-10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Boustany, Bögemann or Kleiman, each alone or with Fujii.

*OPINION*

After considering appellants' specification and the evidence and arguments of record, we conclude that appellants' claims 3, 5, 6, 9 and 10 are unclear to the extent that the determination of obviousness of the claimed subject matter over Bögemann, alone or with Fujii, is not possible. For this reason, we procedurally reverse the examiner's rejection over these references. Regardless of the claim clarity problem, however, we are able to determine that that the aforementioned rejections of claims 4, 7 and 8 over Bögemann, alone or with Fujii, and claims 3-10 over Boustany or Kleiman, each alone or with Fujii, are not well founded. Accordingly, we reverse these rejections on the merits.

*Rejection over Bögemann,  
alone or in view of Fujii*

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Bögemann discloses compounds which are condensation products of mercaptobenzothiazoles with aromatic sulfur chlorides or bromides, and which are useful as vulcanization accelerators

(col. 1, lines 1-3; col. 2, lines 12-14). The aryl group to the right of the disulfide linkage in Bögemann' formula is benzene or naphthalene, which may be substituted with halogen, methyl, nitro or alkoxy (col. 2, lines 1-11).

Fujii discloses (col. 8, lines 1-6) at least one compound which falls within the scope of the formula recited in appellants' claim 3. Fujii's compounds, however, are disclosed as being useful for "immobilizing enzymes, cross linking enzymes and water-insoluble carriers, for immobilizing antigens or antibodies, cross linking antigens or antibodies and water-insoluble carriers, for antigenic haptens, cross linking proteins and haptens, or, as enzyme immuno assay components, the cross linking of enzymes and immune components" (col. 7, lines 50-56).

In appellants' claim 3, R<sup>1</sup> to R<sup>4</sup> are defined as follows:

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"R<sub>1</sub> to R<sub>4</sub> are the same or different and represent H, C<sub>1</sub> - C<sub>12</sub> alkyl, C<sub>6</sub> - C<sub>10</sub> aryl, CH<sub>2</sub>OR<sup>5</sup>, CH<sub>2</sub>COOR<sup>5</sup> and CH<sub>2</sub>OH". The claim then states, "or, wherein the R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> radicals are bonded to one or more carbocyclic rings with 3 to 7 C atoms." As indicated by the "or", the second statement is an alternative to the definition, but does not define R<sup>1</sup> to R<sup>4</sup>. Instead, it merely states what R<sup>1</sup> to R<sup>4</sup> are bonded to. Because the second statement is an

alternative to the definition and does not define R<sup>1</sup> to R<sup>4</sup>, the claim is indefinite.

Also, in view of appellants' disclosure, the meaning of "bonded to one or more carbocyclic rings with 3 to 7 C atoms" is not clear. If R<sup>1</sup> to R<sup>4</sup> can be bonded to one or more carbocyclic rings, then since the term "carbocyclic rings" includes aromatic rings,<sup>2</sup> it appears that the group to the right of the disulfide linkage in the structure in appellants' claim 3 may be the alkoxy-substituted aryl group in Bögemann's formula (col. 2, line 5). However, to get from the generic

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<sup>2</sup> See *The Condensed Chemical Dictionary* 193 (Van Nostrand Reinhold, 10th ed. 1981).

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formula in claim 3 to the structure on the right in the second row of compounds in claim 4, it appears that R<sup>1</sup> to R<sup>4</sup> must be members of a ring rather than being bonded to a ring. If R<sup>1</sup> to R<sup>4</sup> must be members of the ring, then it appears that the ring cannot be aromatic, in which case the claim excludes Bögemann's aryl group.

In some instances, it is possible to make a reasonable, conditional interpretation of claims adequate for the purpose of resolving patentability issues to avoid piecemeal appellate review. In the interest of administrative and judicial economy,

this course is appropriate wherever reasonably possible. See *Ex parte Saceman*, 27 USPQ2d 1472, 1474 (Bd. Pat. App. & Int. 1993); *Ex parte Ionescu*, 222 USPQ 537, 540 (Bd. App. 1984).

In other instances, however, it may be impossible to determine whether or not claimed subject matter is anticipated by or would have been obvious over references because the claims are so indefinite that considerable speculation and assumptions would be required regarding the meaning of terms employed in

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the claims with respect to the scope of the claims. See *In re Steele*, 305 F.2d 859, 862, 134 USPQ 292, 295 (CCPA 1962).

For the reason discussed above, we consider appellants' claim 3 and claims 5, 6, 9 and 10 which depend therefrom and do not remedy the deficiency in claim 3 discussed above, to be sufficiently indefinite that application of Bögemann to the claims is not possible. On this basis, we do not sustain the rejection under 35 U.S.C. § 103 over Bögemann, alone or in view of Fujii. It should be understood that this reversal is not a reversal on the merits of the rejection but, rather, is a procedural reversal predicated upon the indefiniteness of the claims.

Claims 4, 7 and 8, however, recite a Markush group of species within the generic formula recited in claim 3. The examiner has not explained, and it is not apparent, why Bögemann, alone or with Fujii, would have fairly suggested to one of ordinary skill in the art a vulcanizable rubber composition

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containing any of these species. We therefore reverse on the merits the rejection of claims 4, 7 and 8 over Bögemann, alone or with Fujii.

*Rejections over Boustany or Kleiman,  
each alone or in view of Fujii*

We need only to address claim 3, which is the only independent claim.

Boustany discloses certain alkyl- and cycloalkyl-nitro-benzothiazolyl disulfides as vulcanization accelerators (col. 1, line 43 - col. 2, line 2). The benzothiazolyl radical in these compounds, unlike that in appellants' compounds, is substituted in the 5 or 6 position with a nitro radical. Also, the "R" group in Boustany's structural formula (col. 1, lines 48-56) is alkyl or cycloalkyl and, therefore, differs from the polar group to the right of the disulfide linkage in the formula in appellants' claim 3.

Kleiman discloses a method for making unsymmetrical organic disulfides (col. 1, lines 8-16). The examiner does not point to any particular compounds in Kleiman as being similar to appellants' claimed composition.

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The examiner does not explain why Boustany or Kleiman, taken alone, would have fairly suggested appellants' claimed invention to one of ordinary skill in the art. We therefore reverse the rejections over these references applied individually.

Regarding the combination of these references with Fujii, the examiner argues that it would have been obvious to one of ordinary skill in the art to use Fujii's compounds as vulcanization accelerators because their structures are sufficiently similar to those of known dithiobenzothiazole vulcanization accelerators (answer, page 4).

Structural similarity is some evidence of obviousness and is a factor to be taken into account, along with other relevant factors, when determining obviousness of appellants' claimed invention. See *In re Mehta*, 347 F.2d 859, 863-64, 146 USPQ 284, 287 (CCPA 1965). "When the PTO seeks to rely upon a chemical theory, in establishing a prima facie case of obviousness, it must provide evidentiary support for the existence and meaning of that theory. [citation omitted] The known structural relationship between adjacent homologs, for example, supplies

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chemical theory upon which a *prima facie* case of obviousness of a compound may rest." *In re Grose*, 592 F.2d 1161, 1167-68, 201 USPQ 57, 63 (CCPA 1979).

The examiner has not explained why Fujii's compounds are adjacent homologs of the compounds disclosed by Boustany or Kleiman, or provided evidentiary support which shows that any structural similarity between Fujii's compounds and those of Boustany or Kleiman is sufficient that one of ordinary skill in the art would have had a reasonable expectation that Fujii's compounds, like those of Boustany or Kleiman, would be useful as vulcanization accelerators. Consequently, regardless of the meaning of R<sup>1</sup> to R<sup>4</sup> in appellants' claims, we are able to determine that the examiner has not carried his burden of establishing a *prima facie* case of obviousness of appellants' claimed invention over the combined teachings of either Boustany or Kleiman, taken with Fujii. Accordingly, we reverse on the merits the rejections over these combinations of references.

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*REMAND*

We remand the application to the examiner for the examiner and appellants to clarify the claim language and explain their positions regarding the patentability of the clarified claims.

*DECISION*

The rejections of claims 3-10 under 35 U.S.C. § 103 over Boustany, Bögemann or Kleiman, each alone or with Fujii, are reversed.

*REVERSED and REMANDED*

EDWARD C. KIMLIN	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
CHARLES F. WARREN	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
	)	
TERRY J. OWENS	)	)
Administrative Patent Judge	)	

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