

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT D. SYDANSK

Appeal No. 94-1451
Application 07/839,640¹

ON BRIEF

Before KIMLIN, JOHN D. SMITH and PAK, Administrative Patent Judges.

JOHN D. SMITH, Administrative Patent Judge.

DECISION ON APPEAL

¹ Application for patent filed February 21, 1992. According to appellant, this application is a continuation-in-part of Application 07/566,027 filed August 10, 1990, now U.S. Patent No. 5,105,884 granted April 21, 1992.

Appeal No. 94-1451
Application 07/839,640

This is an appeal pursuant to 35 U.S.C. § 134 from the final rejection of claims 1, 3-9 and 14-19. Claims 2 and 10-13 have been allowed.

Claims 1 and 3 are representative and are reproduced below:

1. A foam composition for improving sweep efficiency in a subterranean oil-bearing formation comprising:

a water-soluble, carboxylate-containing polymer selected from a synthetic polymer or a biopolymer;

a trivalent chromium-containing crosslinking agent;

a surfactant;

an aqueous liquid solvent, the combination of said polymer, said crosslinking agent and said surfactant in said solvent defining a liquid foaming composition; and

a foaming gas.

3. The composition of claim 1 wherein said polymer is a biopolymer selected from xanthan gum, guar gum, succinoglycan, scleroglucan, polyvinylsaccharides, carboxymethylcellulose, o-carboxychitosans, hydroxyethylcellulose, hydroxypropylcellulose, modified starches or mixtures thereof.

The reference of record relied upon by the examiner is:

Stern	5,124,363	Jun. 23, 1992 (filed Mar. 26, 1991)
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The appealed claims stand rejected under 35 U.S.C. § 103 as unpatentable over Stern.

Essentially for the reasons set forth by the examiner in his answer, we affirm this rejection.

Appeal No. 94-1451
Application 07/839,640

The subject matter on appeal is directed to a foam composition for improving sweep efficiency in an oil-bearing formation which comprises a water-soluble, carboxylate-containing polymer; a trivalent chromium-containing crosslinking agent; a surfactant; an aqueous liquid solvent; and a foaming gas. Dependent claim 3 defines the water-soluble, carboxylate-containing polymer as a biopolymer including, inter alia, guar gum. A significant issue generated by the examiner's prior art rejection is whether or not the applied prior art reference to Stern describes or suggests a carboxylate-containing guar gum biopolymer as defined by appealed claim 3.

The review of any prior art rejection, whether for anticipation or obviousness, requires first that the claims have been correctly construed to define the scope and meaning of the relevant limitations. Gechter v. Davidson, 116 F.3d 1454, 1457, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997). In proceedings before the Patent and Trademark Office, claims are to be given their broadest reasonable interpretation consistent with the specification and claim language should be read in light of the specification as it would be construed by one of ordinary skill in the art. In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983). Claim construction by the Patent and Trademark

Appeal No. 94-1451
Application 07/839,640

Office is required only to be reasonable, not perfect. In re Morris, -- F.3d --, --, 43 USPQ2d 1753, 1759 (Fed. Cir. 1997).

With these legal principles in mind, we have reviewed appellant's claims in light of their specification. With respect to the claim language defining the water-soluble polymer component as a carboxylate-containing guar gum polymer, appellant's specification indicates at page 6, lines 2-5 that

[e]xemplary carboxylate-containing biopolymers are xanthan gum, guar gum, succinoglycan, scleroglucan, polyvinylsaccharides, carboxymethylcellulose, o-carboxychitosans, hydroxyethylcellulose, hydroxypropylcellulose and modified starches (emphasis added).

This is the sole disclosure in the specification regarding guar gum. Thus, when reasonably construed, the claim language in question covers guar gum per se since, as described in the specification guar gum is said to be a carboxylate-containing biopolymer.

Appellant's counsel contends in the brief at page 5 that only certain² commercially available or naturally occurring guar gums contain carboxylate groups. Thus, according to appellant's counsel, "it is only these guar gums that are suitable for use in

² This argument raises an issue under 35 U.S.C. § 112, first paragraph, as to whether the originally filed application enables claims of the scope presented, a matter that should be resolved in any subsequent prosecution of this case.

Appeal No. 94-1451
Application 07/839,640

the present invention." However, appellant has provided no objective evidence in support of this statement, which itself is inconsistent with the originally filed disclosure in the specification. It is well settled that attorney argument cannot take the place of objective evidence in the record.

With respect to the applied prior art reference to Stern, appellant contends that Stern specifies the structure of guar gum useful in his foam composition as not containing a carboxylate group. See the brief at page 5, lines 4 and 5. However, no disclosure in Stern specifies a complete guar gum structure without a carboxylate group. What Stern discloses is a partial structure of a guar gum repeating unit (not a complete structure of the copolymer) which is said to be the accepted structure of that repeating unit. See Stern at column 5, lines 30-53. In any event, Stern broadly teaches the use of any of the water-soluble, polyhydroxy polymers known in the art, for example, as disclosed in the "Handbook of Water-Soluble Gums and Resins" published by McGraw-Hill Book Co. (1988). See Stern at column 4, lines 56-61. Thus, even if the argument by appellant's counsel is ultimately confirmed, i.e., that only "certain" commercially available or "certain" naturally occurring guar gums contain carboxylate

Appeal No. 94-1451
Application 07/839,640

groups, these materials are contemplated for use in the Stern composition.

Based on the above, the examiner correctly determined that the Stern disclosure meets every limitation of the instantly claimed invention with the exception of the identity of a trivalent chromium crosslinker. The examiner points out that Stern does suggest the use of hexavalent chromium crosslinkers, and the examiner further contends that a person of ordinary skill in the art was aware that chromium crosslinking may be effected by reducing hexavalent chromium to trivalent chromium. Thus the examiner persuasively argues that a person of ordinary skill in the art, familiar with the environmental concerns and laws which prohibit hexavalent chromium salts from being injected into the earth, would have been motivated to use a hexavalent chromium system combined with a redox system, thus to effectively produce a trivalent chromium crosslinker in Stern's composition. See the Answer at page 3.

Appellant has not challenged the examiner's factual assertions or rationale regarding the use of a hexavalent chromium redox system in the composition of Stern. What counsel for appellant contends is that a skilled artisan would realize that trivalent chromium crosslinking agents are not capable of

Appeal No. 94-1451
Application 07/839,640

crosslinking polyhydroxy polymers in an aqueous air foam as disclosed in Stern by complexation, through hydrogen bonding, of cis 1,2-diol or 1,3 -diol groupings of such polymers, since trivalent chromium would allegedly³ have a significantly stronger interaction with water present in the aqueous air foam than with the cis 1,2-diol or 1,3-diol groupings. See the Brief at page 6. Objective evidence to support counsel's contention is not of record, however.

In light of the foregoing, we affirm the examiner's rejection of the appealed claims under 35 U.S.C. § 103.

The decision of the examiner is affirmed.

³ This argument also raises an enablement issue under 35 U.S.C. § 112, first paragraph, because, if factual, a skilled artisan would also expect to see the same relative effect with carboxylate groups.

Appeal No. 94-1451
Application 07/839,640

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

EDWARD C. KIMLIN)	
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JOHN D. SMITH)	BOARD OF PATENT
Administrative Patent Judge))	APPEALS AND
)	INTERFERENCES
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Appeal No. 94-1451
Application 07/839,640

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