

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHARLES T. ARKENS
and ROBERT D. GLEIM

Appeal No. 1998-3158
Application No. 08/467,634

ON BRIEF

Before OWENS, WALTZ and KRATZ, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the examiner's final rejection of claims 10-28, which are all of the claims remaining in the application.

THE INVENTION

Appellants claim a method for curing a recited aqueous composition formed from a polyacid and a polyol using a phosphorous-containing accelerator. The cured composition is useful as a binder for nonwoven heat-resistant fabrics (specification, page 2). Claim 10 is illustrative:

10. A method for curing polyacids comprising:

(a) forming a curable aqueous composition comprising admixing

acid (1) a polyacid comprising at least two carboxylic groups, anhydride groups, or salts thereof;

groups; and (2) a polyol comprising at least two hydroxyl groups;

(3) a phosphorous-containing accelerator;

wherein the ratio of the number of equivalents of said carboxylic acid groups, anhydride groups, or salts thereof to the number of equivalents of said hydroxyl groups is from about 1/0.01 to about 1/3, and wherein said carboxylic acid groups, anhydride groups, or salts thereof are neutralized to an extent of less than about 35% with a fixed base, and

(b) heating said curable aqueous composition at temperature of from about 120 C. to about 400 C.^[1]

¹Appellants define "fixed base" as "a monovalent base which is substantially non-volatile under the conditions of the treatment such as, for example, sodium hydroxide, potassium hydroxide, sodium carbonate, or t-butylammonium hydroxide" (specification, page 12, lines 17-20). Appellants state that "[v]olatile bases such as, for example, ammonia or volatile lower alkyl amines, do not function as the fixed base

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THE REFERENCES

Welch et al. (Welch) 1990	4,936,865	Jun. 26,
Arkens et al. (Arkens) 1992	5,143,582	Sep. 1,

THE REJECTION

Claims 10-28 stand rejected under 35 U.S.C. § 103 as being unpatentable over Arkens in view of Welch.

OPINION

We have carefully considered all of the arguments advanced by appellants and the examiner and agree with appellants that the aforementioned rejection is not well founded. Accordingly, we reverse this rejection.

Arkens discloses a method for making a heat resistant nonwoven fabric (col. 1, lines 5-7). The heat resistant fibers used to make the fabric are "fibers which are substantially unaffected by exposure to temperatures above

of this invention, but may be used in addition to the fixed base; they do not contribute to the required degree of neutralization by a fixed base" (specification, page 12, lines 22-26).

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about 125EC", such as aramid fibers, polyester fibers and glass fibers (col. 6, lines 17-22). A binder which holds the fibers together in the nonwoven fabric is made by mixing a polymer having carboxy, anhydride or carboxy salt groups with either a S -hydroxyalkylamide or a polymer prepared from a S -hydroxyalkylamide (col. 3, lines 15-19), and curing the composition at about 125EC to about 400EC (col. 6, lines 26-28). The polymer having carboxy, anhydride or carboxy salt groups may have at least two such groups, and the carboxy group-containing polymer may be neutralized, all or in part, with a base such as ammonia, sodium hydroxide or an amine (col. 3, lines 48-60; col. 6, line 56). The S -hydroxyalkylamide is one of appellants' polyols (specification, page 13, line 13). The ratio of hydroxy groups to carboxy, anhydride or carboxy salt groups is 0.5:1 to 2:1, and ratios outside this range can be used (col. 5, lines 30-42). The S -hydroxyalkylamide is an efficient curing agent and, therefore, a curing catalyst is not needed (col. 4, lines 1-4; col. 6, lines 32-33). Arkens does not disclose appellants' phosphorous-containing accelerator.

Welch discloses esterification catalysts for crosslinking

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cellulose to impart wrinkle resistance and smooth drying properties to cellulosic textiles which may be woven or nonwoven (col. 1, lines 12-15; col. 4, lines 24-26). The cellulosic material is impregnated with polycarboxylic acid and the catalyst, and then heat curing takes place to produce esterification and crosslinking of the cellulose with the polycarboxylic acid (col. 3, lines 19-23). The catalyst is an alkali metal salt of a phosphorous-containing acid, i.e., phosphorous acid, hypophosphorous acid or polyphosphoric acid (col. 3, lines 27-30).

The examiner argues (answer, page 3):

Welch teaches the use of the alkyl metal phosphite catalysts provides compositions which have wrinkle resistance and smooth drying properties. One of ordinary skill in the art would be motivated to employ the curing catalysts disclosed by Welch in the composition of Arkens to provide a composition which has improved wrinkle resistance and smooth drying properties.

In order for a *prima facie* case of obviousness to be established, the teachings from the prior art itself must appear to have suggested the claimed subject matter to one of ordinary skill in the art. See *In re Rinehart*, 531 F.2d 1048, 1051,

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189 USPQ 143, 147 (CCPA 1976). The mere fact that the prior art could be modified as proposed by the examiner is not sufficient to establish a *prima facie* case of obviousness. See *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992).

Arkens reacts a carboxy-, anhydride- or carboxy salt-containing polymer with a S -hydroxyalkylamide in the presence of heat resistant fibers, the disclosed fibers being aramid, polyester and glass fibers. These fibers are not disclosed as containing hydroxyl groups. Welch, on the other hand, reacts a polycarboxylic acid with hydroxyl groups of a cellulosic textile to impart wrinkle resistance and smooth drying properties to the textile. The examiner does not explain, and it is not apparent, why one of ordinary skill in the art would have been led by the references to use Welch's catalyst, which is used for catalyzing the esterification reaction between a polycarboxylic acid and hydroxyl groups of cellulosic fibers such that the desired cellulosic fiber textile properties are obtained, as a catalyst for reacting Arkens' carboxy-, anhydride- or carboxy salt-containing polymer with hydroxyl

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groups of a S -hydroxyalkylamide which is separate from fibers which do not appear to be cellulosic fibers and which are not disclosed as containing hydroxyl groups. The examiner argues that cellulose is a polyol (answer, page 6), but has not established that Welch would have led one of ordinary skill in the art to use the disclosed catalyst for esterification reactions generally or for Arkens' esterification reaction in particular. The properties obtained by Welch, it is noted, which are wrinkle resistance and smooth drying properties of fabrics used for garments, do not appear to be useful properties of Arkens' nonwoven fabric which is for applications such as making roofing shingles (col. 1, lines 13-33), is heat resistant (col. 6, lines 17-22), and is subjected to curing temperatures as high as about 400EC (col. 6, lines 28-29). The examiner argues that Arkens' teaching that "[i]t is not necessary to employ a catalyst to effect curing" (col. 6, lines 32-33) indicates that a catalyst can be used if desired to accelerate the reaction (answer, pages 4-5). Even if this argument is correct, however, it is not adequate because, in order for a *prima facie* case of

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obviousness to be established over the applied references, these references must have fairly suggested, to one of ordinary skill in the art, combining their teachings to arrive at the claimed invention. As discussed above, the examiner has not set forth a convincing reason as to why the references would have provided one of ordinary skill in the art with such a suggestion. Instead, the examiner has relied upon impermissible hindsight for motivation to combine the teachings of the references. See *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); *In re Rothermel*, 276 F.2d 393, 396, 125 USPQ 328, 331 (CCPA 1960).

For the above reasons we conclude that, on this record, the examiner has not established a *prima facie* case of obviousness of appellants' claimed invention.

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DECISION

The rejection of claims 10-28 under 35 U.S.C. § 103 over
Arkens in view of Welch is reversed.

REVERSED

TERRY J. OWENS)	
Administrative Patent Judge)	
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)	
)	BOARD OF PATENT
THOMAS A. WALTZ)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
)	
)	
PETER F. KRATZ)	
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