

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FRANK J. TRAVER and DUANE F. MERRILL

Appeal No. 95-2270
Application 08/005,856¹

ON BRIEF

Before: GRON, Administrative Patent Judge, and
McKELVEY, Senior Administrative Patent Judge, and
OWENS, Administrative Patent Judge.

McKELVEY, Senior Administrative Patent Judge.

Decision on appeal under 35 U.S.C. § 134

¹ Application for patent filed January 15, 1993. Applicants claim the benefit (35 U.S.C. § 120) of the filing date of application 07/850,711, filed March 13, 1992, and application 07/265,192, filed October 31, 1988, now U.S. Patent N° 5,128,394 issued July 7, 1992. The real party in interest is General Electric Company.

This appeal is from a decision of the Primary Examiner rejecting claims 45-54 as being unpatentable under 35 U.S.C. § 103 over the prior art. We reverse.

A. Findings of fact

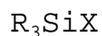
Prior art polysiloxane pressure-sensitive adhesives

1. Pressure-sensitive adhesives based on organopolysiloxane compositions are known. See Goodwin, U.S. Patent N° 2,857,356, issued October 21, 1958.

2. According to Goodwin, the compositions are made by "intercondensing [i.e., reacting,] a mixture of ingredients" (col. 2, lines 23-24) comprising (a) a "resin" and (b) a "fluid."

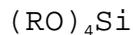
3. The "resin" is a cohydrolysis product of:

(i) a trialkyl hydrolyzable silane, having the formula:



where X can be, e.g., an alkoxy radical (col. 2, lines 31-44) and

(ii) an alkyl silicate having the formula:



where R is a lower alkyl radical, such a methyl or ethyl (col. 2, lines 45-56).

4. The resin contains "a plurality of silicon-bonded hydroxy groups" (col. 2, lines 27-28).

5. For each mole of trialkyl silane used in the cohydrolysis, there should be used from 1 to 2 mols, advantageously about 1.2 to 1.8 mols of the alkyl silicate (col. 4, lines 15-21).

6. The "fluid" is a "high viscosity organopolysiloxane" (col. 4, line 47) "having a viscosity within the range of about 75,000 to 125,000 centipoises" (col. 6, lines 16-17), which is treated so as to have "a terminal silicon-bonded hydroxyl group" (col. 6, lines 30-31), and is further treated "to obtain a higher viscosity material, for instance, one having a viscosity of about 200,000 to 3,000,000 centipoises (col. 6, lines 39-41).

7. The organopolysiloxane pressure-sensitive adhesive is made by mixing the "resin" and the "fluid" under conditions which permit "interaction [i.e., reaction,] between the" resin and fluid (col. 6, lines 62-66).

8. The proportion of resin to fluid advantageously is within the range of 0.5 to 6.0 weight parts of fluid per weight part of resin (col. 7, lines 21-24).

9. In Table 1 of Example 1 there is described three resin/fluid mixtures said to have been used to make pressure-

Appeal No. 95-2270
Application 08/005,856

sensitive adhesives which are said adhere to various materials, "for instance, glass, polytetrafluoroethylene, polyethylene, etc." (col. 8, lines 63-64).

Prosecution of the application on appeal

10. On March 13, 1992, applicants filed what is known as a "Rule 60" divisional application of application 07/265,192, filed October 31, 1988, now U.S. Patent N° 5,128,394, issued July 7, 1992. The Rule 60 division application was assigned Application No. 07/850,711.

11. Accompanying the request for filing the Rule 60 divisional application, was a document styled PRELIMINARY AMENDMENT A (Paper No. 3). Internally, the PTO designated the amendment as "amendment B". The amendment requested that claims 22-34 be added to the application.

12. On June 24, 1992, applicants filed a document styled PRELIMINARY AMENDMENT (Paper No. 6). The amendment requested cancellation of claims 22-34 and entry of claims 35-44. Internally, the PTO designated the amendment as "amendment C". The amendment was entered resulting in:

- (1) the cancellation of claims 22-34 (as requested by applicants),
- (2) entry of claims 35-44 (as requested by applicants) and

Appeal No. 95-2270
Application 08/005,856

- (3) cancellation of page 13 of the specification (insofar as we can tell, applicants made no request for cancellation of any part of the specification, and in particular, did not request cancellation of page 13).

A copy of the amendment designated internally by the PTO as "amendment B", containing clerical entries based on the amendment designated internally as "amendment C" is Appendix 1 to our opinion.

13. On January 15, 1993, applicants filed what is known as a "Rule 62" continuation application of application 07/850,711. The Rule 62 continuation application was assigned Application No. 08/005,856, and is the application on appeal.

14. In a document styled PRELIMINARY AMENDMENT (Paper No. 11), applicants requested entry of claims 45-54.

15. The descriptive part of applicants specification of the application on appeal should consist of pages 1-13.² The descriptive part of the specification of the application on appeal is the same as the descriptive part of the specification

² While applicants bear no responsibility for the PTO's apparent inadvertent cancellation of page 13, it is our opinion that the easiest way to correct the specification would be for applicants to submit an amendment, along with a clean copy of page 13, and ask that "new" page 13 be added following page 12. Clearly, no new matter (35 U.S.C. § 132) is involved inasmuch as page 13 was part of the original specification and applicants never requested its cancellation from the specification.

Appeal No. 95-2270
Application 08/005,856

of applicants' U.S. Patent N° 5,128,394, a copy of which is made Appendix 2 to our opinion. For ease of reference, we will refer to the patent in describing applicants' invention.

Applicants' invention

16. Applicants indicate in their BRIEF ON APPEAL (Paper No. 21, page 2) that "Claims 45-54 fall within one group of claims" and make no argument that claims 46-54 are separately patentable from the broadest claim, which is claim 45.

17. Claim 45 reads as follows:

A controlled-release adhesive composition comprising:

(A) An interpenetrating pressure-sensitive adhesive mixture comprising:

(i) from about 50 to about 99% by weight organic pressure-sensitive adhesive, and

(ii) from about 1 to about 50%: by weight of silicone pressure-sensitive adhesive; and

(B) an amount of silicone cross-linking agent effective to increase shear strength of the composite adhesive.

18. According to the specification, the "organic pressure-sensitive adhesive" can be base rubbers, including (col. 2, lines 15-25):

Appeal No. 95-2270
Application 08/005,856

milled natural rubber, reclaimed rubber, styrene-butadiene rubber, butyl rubber, butadiene-acrylonitrile rubber, polyvinyl ether rubbers, polyacrylate ester rubber, styrene-butadiene-styrene rubber, styrene-isoprene-styrene rubber, etc.

19. Preferred organic pressure-sensitive adhesives are (col. 2, lines 32-38):

the acrylate pressure sensitive adhesives which are normally a copolymer of a higher alkyl acrylate such as 2-ethyl hexyl acrylate copolymerized with a small amount of a polar comonomer. Suitable comonomers include acrylic acid, acrylamide, maleic anhydride, diacetone acrylamide, and long chain alkyl acrylamides.

20. The "silicone pressure-sensitive adhesive" is said to be "well known in the art" (col. 2, lines 43-44). According to the specification, the silicone pressure-sensitive adhesives (col. 2, lines 45-60):

contain a mixture of silicone resins and silicone fluids. The silicone resins are generally referred to as MQ resins which contain M units, represented by the formula $R_3SiO_{1/2}$, and Q units, represented by the formula $SiO_{4/2}$, where R is a monovalent hydrocarbon radical. Generally, such resins contain 1 to 2 Q units for each M unit. The silicone fluids

are linear, high viscosity organopolysiloxane fluids having a viscosity between about 50,000 and 3,000,000 centipoise and containing terminal silicon-bonded hydroxyl groups used for co-reacting with the above described MQ resins.

These silicone pressure-sensitive adhesives are blended and cured by reacting the resins with the fluids in a condensation reactor. Typically, for each part by weight of resin, there is added from 0.5 to 6 parts by weight fluid.

21. The specification describes suitable "silicone cross-linking agents" as including (col. 2, lines 61-65):

the organic peroxides and alkoxy silanes. The use of either cross-linking agent will increase the cross-link density of the silicone adhesive and as seen *** [in Example 4], the shear strength of the adhesive composite.

22. Suitable peroxide cross-linking agents are said to include (col. 2, line 66 et seq.):

diaroyl peroxides, such as dibenzoyl peroxide, di-p-chlorobenzoyl peroxide, and bis-2,4-dichlorobenzoyl peroxide; dialkyl peroxides such as di-t-butyl peroxide and 2,5-dimethyl-2,5-di-(t-butylperoxy)-hexane; diaralkyl peroxides such as dicumyl peroxide; alkyl aralkyl peroxides such as t-butyl cumyl peroxide, and 1,4-bis(t-butylperoxyisopropyl)-benzene; alkyl aroyl and alkyl acyl

peroxide such as t-butyl perbenzoate, t-butyl peracetate, and t-butyl peroctoate; and other peroxides such as peroxy siloxanes and peroxy carbonates.

23. Suitable alkoxy silane cross-linking agents are said to be (col. 3, line 19 et seq.):

well known in the art and cross-link the silicone pressure-sensitive adhesive through a condensation reaction with Si)OH end groups. The preferred cross-linking agents are methoxy and ethoxysilanes such as methyltrimethoxy silane, ethyl silicate, gamma-aminopropyltrimethoxy silane, triethoxy silane, etc. The alkoxy cross-linking agents require a cross-linking catalyst such as amines or carboxylic acid salts of metals including Pb, Zn, Zr, Sb, Fe, Cd, Sn, Ba, Ca, and Mn, particularly the naphthenates, octoates, hexoates, laurates, and acetates thereof. Tin (II) octoate and dibutyltin dilaurate are particularly satisfactory. Amine substituted cross-linking agents such as gamma-aminopropyltrimethoxy silane are self-catalyzing.

24. There are four examples in applicants' specification.

a. Example 1 (col. 5) describes the preparation of an emulsion containing an MQ resin and a silicone fluid. The example does not represent the claimed invention.

b. Example 2 (col. 6) describes the mixture of an acrylic emulsion and the emulsion of Example 1. The example does not represent the claimed invention.

c. Example 3 (col. 6) describes testing of a mixture of silicone and acrylic emulsion of Example 2 for shear resistance. According to the example, it was found that the emulsion of Example 2, when dried on mylar, "has no shear resistance at 70°C" (col. 6, lines 39-40). The example does not represent the claimed invention.

d. Example 4 (col. 6) describes testing of the emulsion of Example 2 (i.e., silicone and acrylic) after the emulsion is "catalyzed with 2% benzoyl peroxide based on the silicone parts of the mixture only" (col. 6, lines 44-45). According to applicants, when tested for shear resistance at 70°C, "[t]here was no shear failure after 600 hours" (col. 6, lines 49-50).

The Doehnert reference

25. Doehnert describes pressure-sensitive adhesives (col. 1, line 9).

26. According to Doehnert (col. 4, lines 32-38):
[s]uitable natural and synthetic gum-like substances which may be used singly or in admixture as the pressure-sensitive adhesive component in the adhesive compositions of this

invention include natural rubber, silicone rubber, acrylonitrile rubber, polyurethane rubber, polyisobutylene, acrylic polymers and other like substances.

27. In various examples (col. 7), Doehnert describes pressure-sensitive adhesives made from mixtures of natural and/or synthetic gum-like substances (Examples 1-3 and 7), as well as adhesives made from a single natural or synthetic gum-like substances (Examples 4-6).

The examiner's rejection

28. The examiner rejected claims 45-54 as being unpatentable under 35 U.S.C. § 103 over the combined disclosures of Goodwin and Doehnert.

29. The examiner found that Goodwin describes "the incorporation of compounds which act as cross-linking agents specifically at column 2, line 45+" (Examiner's Answer, page 2).

30. The examiner also found that the sole difference between the subject matter of claim 45 and Goodwin was that Goodwin did not describe the presence of the organic pressure-sensitive adhesive (Examiner's Answer, page 3).

31. The examiner determined, however, that the use of a mixture of an organic pressure-sensitive adhesive and a silicon pressure-sensitive adhesive is described by Doehnert.

32. Based on his findings, the examiner concluded that it would have been prima facie obvious to use the silicon pressure-sensitive adhesive of Goodwin as the silicon pressure-sensitive adhesive in Doehnert along with another natural or synthetic gum-like adhesive.

Applicants' position

33. According to applicants, "the use of a crosslinking agent in the mixture of silicone pressure sensitive adhesive and organic pressure sensitive adhesive is critical ***" (Brief on appeal, page 5). In support of their argument, applicants point to Example 3 (no crosslinking agent and no shear resistance) and to Example 4 (use of crosslinking agent resulting in shear resistance).

34. Applicants go on to say that they "are unable to find any teaching or suggestion in either Goodwin or Doehnert *** of the use of a cross-linking agent in combination with a mixture of organic pressure sensitive adhesive and silicone pressure sensitive adhesive ***" (Brief on appeal, page 5).

B. Discussion

The critical issue in this case is whether the mono- or polyalkyl silicate or for that matter the "resin," described by Goodwin (col. 2, line 49 and lines 31 et seq.) is a "silicone

Appeal No. 95-2270
Application 08/005,856

cross-linking agent" within the context of the Claim 45 composition.

Claim interpretation is a legal question to be resolved based on the facts in a particular case. Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp., 93 F.3d 1572, 1577, 40 USPQ2d 1019, 1022 (Fed. Cir. 1996) (significance to be given a limitation in a patent claim is a question of law which is resolved based on particular facts); Moeller v. Ionetics, Inc., 794 F.2d 653, 229 USPQ 992 (Fed. Cir. 1986) (construction of claim is a question of law). The meaning of words or phrases in a claim may be ascertained from the language of the claims, the specification and prosecution history. Smithkline Diagnostic, Inc. v. Helena Laboratories Corp., 859 F.2d 878, 882, 8 USPQ2d 1468, 1471 (Fed. Cir. 1988).

It should be also noted that during examination, claims before the PTO are given their broadest reasonable interpretation consistent with the specification. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).

The examiner found that the monomeric or polymeric alkyl silicates of Goodwin were silicone cross-linking agents within the context of the Claim 45 composition. We cannot agree.

Goodwin describes an organopolysiloxane pressure-sensitive adhesive which comprises a reaction product of two items, a

Appeal No. 95-2270
Application 08/005,856

"resin" and a "fluid." The resin is essentially the same as the resin described by applicants for making their silicone pressure-sensitive adhesive. The M units of applicants' resin correspond to the units derived from Goodwin's R_3SiX units and the Q units of applicants' resin correspond to the units derived from Goodwin's $(RO)_4Si$ units. Likewise, the fluid is essentially the same as the fluid described by applicants for making their pressure-sensitive adhesive. Both are organopolysiloxane fluids. Applicants' fluid has a viscosity of about 50,000 to 3,000,000 centipoise and Goodwin's fluid has a viscosity of 200,000 to 3,000,000 centipoise. Applicants and Goodwin mix the resin and fluid in essentially identical ratios of 0.5 to 6 weight parts fluid per weight part of resin. In both instances, hydroxyl groups on the resin will react with hydroxyl groups on the fluid. On this record, Goodwin's resin alone or Goodwin's fluid alone has not been shown to function as a "silicone pressure-sensitive adhesive" within the meaning of claim 45.

There is no composition described in Goodwin which comprises what applicants' refer to in claim 45 as a "silicone pressure-sensitive adhesive" in combination with a "silicone cross-linking agent." Accordingly, even if one were to combine the teachings of Goodwin and Doehnert, and even if one were to assume that it would have been obvious to use a mixture of an acrylic polymer

Appeal No. 95-2270
Application 08/005,856

and a silicone pressure-sensitive adhesive, the invention of claim 45 would not be met. The mono- or polyalkyl silicate used by Goodwin to make a resin cannot be said to also be a "silicone cross-linking agent" within the context of the Claim 45 composition.

We find that the prior art does not describe the use of a material which is a "silicone cross-linking agent" in an amount sufficient for applicants' purpose, i.e., "increase shear strength" of a composition comprising a "silicone pressure sensitive adhesive". Therefore, we conclude that a prima facie case of obviousness is not made out by the combined teachings of Goodwin and Doehnert.

C. Decision

The decision of the examiner rejecting claims 45-54 under 35 U.S.C. § 103 over the combined teachings of Goodwin and Doehnert is reversed.

REVERSED

TEDDY S. GRON,)
Administrative Patent Judge)
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Appeal No. 95-2270
Application 08/005,856

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| Administrative Patent Judge |) | APPEALS AND |
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| TERRY J. OWENS, |) | |
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Appeal No. 95-2270
Application 08/005,856

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Appendix 1

Appendix 2