

NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

(Serial No. 12/190,101)

IN RE STEVEN SUTTON AND STEPHEN THORP

2012-1255

Appeal from the United States Patent and Trademark
Office, Board of Patent Appeals and Interferences

Decided: November 20, 2012

ANTON J. HOPEN, Smith & Hopen, P.A., of Oldsmar,
Florida, for appellants.

RAYMOND T. CHEN, Solicitor, Office of the Solicitor,
United States Patent and Trademark Office, of Alexan-
dria, Virginia, for Director of the United States Patent
and Trademark Office. With him on the brief were JAMIE
L. SIMPSON and NATHAN K. KELLEY, Associate Solicitors.

Before PROST, MOORE, and O'MALLEY, *Circuit Judges*
Per Curiam

Steven Sutton and Stephen Thorp (collectively “Sutton”) appeal from the decision of the Board of Patent Appeals and Interferences (“Board”) affirming the rejection of claims 7-9, 14, 19, and 30 of U.S. Patent Application No. 12/190,101 (“the ’101 application”) as obvious under 35 U.S.C. § 103(a). Because the Board’s conclusion is supported by substantial evidence and not legally erroneous, we *affirm*.

I

On August 8, 2008, Sutton filed the ’101 application entitled, “Flexible Reflective Composition,” which discloses a flexible vinyl film with fluorescent coloring that can withstand color degradation when exposed to sunlight. The vinyl film is composed of ethylene, vinyl acetate, and vinyl chloride, a “terpolymer,” and fluorescent dye(s) added to the polymer matrix for coloring. A purported key inventive concept was the elimination of a “plasticizer” as a necessary component of the formulation while maintaining the flexibility and color stability of the vinyl film.

Sutton’s solution is to incorporate fluorescent dye(s) in a polymer matrix consisting of the cited terpolymer, absent a plasticizer normally added to provide flexibility. Sutton purports to have discovered that the disclosed terpolymer remains surprisingly flexible for use in a variety of applications, without the need for plasticizers, which increase flexibility but speed color degradation when exposed to the outdoors. By eliminating plasticizers, the fluorescent dye(s) maintain their “[i]nherent long useful life,” and overcome the shortcomings of prior art flexible vinyl films. ’101 application at 00015. Sutton also discloses that the useful life of the film may be extended through the use of ultraviolet (“UV”) light absorb-

ers, hindered amine light stabilizers (“HALs”), or overlay film. A plasticizer, nevertheless, may be added to increase flexibility as so desired.

Claim 7 is representative of the claims on appeal: “a vinyl film subject to outdoor weathering, comprising a fluorescent dye and a terpolymer of ethylene—vinyl acetate—vinyl chloride that imparts color stability and flexibility to the film.” ’101 application, Claim 7. The other five claims on appeal are variations of claim 7: (1) claim 8 adds a generic plasticizer; (2) claim 9 adds polyvinyl chloride (“PVC”); (3) claim 14 adds diisodecyl phthalate, a low molecular weight plasticizer; (4) claim 19 adds an ethylene n-butyl acrylate carbon monoxide polymer, a high molecular weight plasticizer; and (5) claim 30 explicitly excludes use of a plasticizer.

II

The examiner at the United States Patent and Trademark Office (“PTO”) rejected all of the claims currently on appeal as obvious pursuant to 35 U.S.C. § 103(a). The examiner found claims 7, 8, and 30 obvious over U.S. Patent No. 5,055,515 (“Backderf”), in view of U.S. Patent No. 6,526,588 (“White”), with further evidence provided by JP 10-245519 (“Ibuki”) and U.S. Patent Application Pub. No. 2009/0159691 (“Halbur”). The examiner relied on the same combination for claims 9, 14, and 19, with further evidence provided by U.S. Patent No. 3,960,986 (“Heichele”) and U.S. Patent No. 5,346,755 (“Morse”). The Board adopted the examiner’s reasoning and analysis as its own, and affirmed the examiner’s rejections, both initially and upon reconsideration.

A. Backderf

Backderf issued on October 8, 1991, and is entitled “Flexible Overpolymers of Vinyl Chloride Polymers on

Ethylene Copolymers.” Backderf is directed to plastic compositions and discloses Sutton’s precise terpolymer as a particular embodiment. *See Backderf* col.1 ll.17-21 (“[t]he invention generally relates to thermoplastic elastomers [comprising] an ethylene copolymer overpolymerized with one or more vinyl chloride or vinyl chloride type monomers and optionally an acrylate comonomer”); *id.* at col.2 ll.48-49 (“[s]pecifically preferred copolymers include ethylene vinyl acetate”). Backderf discloses that the claimed elastomers are flexible with or without the addition of a plasticizer. *See id.* at Abstract (“[i]n another embodiment, the overpolymers are flexible without the need for a plasticizer or blending agent”); *id.* at col.1 ll.21-33 (“[i]n a first embodiment, the elastomer is blended with a plasticizer . . . [i]n another embodiment, the elastomer is not blended with a plasticizer.”).

B. White

White issued on March 4, 2003, and is entitled, “Stabilization of Fluorescent Dyes in Vinyl Chloride Articles Using Hindered Amine Light Stabilizers.” White teaches polyvinyl chloride articles combined with fluorescent dye(s) and HALs. *White* at col.2 ll.33-55. White’s use of HALS stabilizes the fluorescent color of the claimed articles and ensures that the articles retain their fluorescent color when exposed to outdoor conditions. *See id.* at col. 2 ll.33-41; col.3 ll.3-7 (“[t]he inventive articles retain their color and are able to fluoresce for a longer time period than is normally expected even when they are exposed to direct sunlight.”).

C. Ibuki and Halbur

The examiner used Ibuki and Halbur as “teaching references” for the properties of ultraviolet light, plastics, and fluorescent dyes. Ibuki is directed to vinyl resin film used to coat metal sheets. *See Ibuki* at Abstract. Ibuki

discloses, among other things, that UV light may cause discoloration or degradation of vinyl chloride resin films. *Id.* at 0025. Halbur discloses a plastic card formed by a polymer resin mixed with fluorescent dye(s) such that the edges of the card appear to “glow.” *Halbur* at Abstract. Halbur teaches a particular embodiment where the fluorescent dye absorbs UV light which “reflects” off the claimed substrate, or in other words, is re-emitted as visible light. *Id.* at [0024].

D. Heichele and Morse

Heichele issued on June 1, 1976, and is entitled, “Impact-Resistant Molding Compositions Containing Polyvinyl Chloride.” The patent generally discloses a molding composition made of PVC and other grafted copolymers that demonstrates a high resistance to impact. *Heichele* at col.1 ll.38-60. Heichele discloses an embodiment using PVC in combination with a terpolymer of ethylene, vinyl acetate, and vinyl chloride. *Id.* at col.2 ll.35-44; col.4 ll.34-37, col.5 ll.40-42. Morse issued on September 13, 1994, and is entitled “Stain Resistant Cleanable PVC Fabric.” Morse is directed to plastic coated films that are stain resistant, easily cleanable, and flexible. *Morse* at Abstract. Morse teaches that certain additives, such as ethylene-n-butyl acrylate carbon monoxide and diisodecyl phthalate may be used to modify oil resistance or flexibility. *Id.* at col.3 ll.20-37.

III

While the examiner rejected all pending claims of Sutton’s application, Sutton only appealed the rejection of claims 7-9, 14, 19, and 30 to the Board. The Board adopted the examiner’s reasoning and analysis from the examiner’s answer on appeal to the Board as its own, and affirmed the obviousness finding. Beyond adopting the

examiner's answer, the Board also explicitly rejected a series of arguments advanced by Sutton.

The Board first found claims 7, 8, and 30 obvious based on the combination of Backderf and White. According to the Board, Backderf discloses a vinyl film composed of the precise terpolymer used by Sutton which is flexible with or without the addition of a plasticizer. The Board noted that Backderf fails to disclose both the vinyl film combined with fluorescent dye(s) and the color stability that the terpolymer can provide when subjected to the outdoors. White, however, discloses a durable and flexible polyvinyl chloride film having fluorescent properties using similar fluorescent dye(s) as disclosed by Sutton. The Board found that Backderf and White together disclose an identical terpolymer as Sutton claims, and that the terpolymer would "intrinsically" impart color stability to the film when subjected to the outdoors.

The Board found further motivation to combine Backderf and White based on the disclosures of Ibuki and Halbur. The Board relied on Ibuki and Halbur to demonstrate that a person of ordinary skill in the art would understand that UV light causes degradation of vinyl chloride resins, and that fluorescent dye(s) improve outdoor "weatherability." Ibuki and Halbur, therefore, according to the Board, provide further evidence that a person of ordinary skill in the art would be motivated to combine the fluorescent dye(s) disclosed in White with the vinyl film of Backderf to improve the useful life of the film when subjected to the outdoors.

The Board then relied on the combination of Backderf and White, with further evidence of motivation provided by Ibuki and Halbur, to reject claim 9. And the Board relied on Backderf in view of White and Morse with further evidence of motivation provided by Ibuki and

Halbur to reject claims 14 and 19. Regarding claim 9, the Board noted that Heichele discloses a molding composition consisting of significant amounts of PVC combined with the same terpolymer used by Sutton. The Board additionally found that Backderf teaches that the terpolymer would be flexible and that, for the same reasons as before, a person of skill would be motivated to combine the teachings of Backderf, White, and Heichele. For claims 14 and 19, the Board noted that Morse discloses both of the plasticizers disclosed by Sutton in his claims for use with flexible plastic films, and for much the same reasons as before, a person of skill would be motivated to apply Morse's teachings to the Backderf and White combination.

The Board also rejected Sutton's argument that the claims on appeal exclude a plasticizer, and found that Sutton's use of the transitional phrase "comprising" provided his claims broader scope, allowing for additional unrecited elements. Next, the Board found that Sutton had failed to provide any credible evidence to rebut the examiner's finding that the properties of color stability and flexibility would be "intrinsically" present in the prior art, which teaches the precise terpolymer and fluorescent dye combination disclosed in Sutton's claims. The Board last rebutted Sutton's argument that the empirical data in his application refutes the examiner's rationale as to the motivation to combine Backderf and White, in further view of Ibuki and Halbur, by noting that, even if correct, the examiner additionally found that a person of skill would be motivated to combine Backderf and White without the teachings of Ibuki and Halbur.

Sutton requested rehearing, raising four issues: (1) the Board's finding that the claimed invention may include a plasticizer ignores claim 30, which explicitly disclaims use of a plasticizer; (2) the Board misappre-

hended White's teaching that a vinyl-fluorescent dye composition would have properties *contrary* to Sutton's claimed invention; (3) based on the doctrine of claim differentiation, claims 7 and 30 should not be interpreted to include a plasticizer, because claim 8 explicitly recites use of one; and (4) the Board incorrectly framed the invention as a flexible fluorescent vinyl film without a plasticizer, when the purported breakthrough also includes the discovery that the flexible terpolymer provides unique protection against photodegradation.

The Board denied the request for rehearing, rejecting each of Sutton's points. First, the Board agreed that claim 30 contains a "plasticizer free" limitation, but noted that the examiner explicitly found that Backderf teaches a flexible terpolymer without use of a plasticizer. Second, the Board noted that Sutton's description of White's teaching was based on the "background art" section and that White is directly relevant to Sutton's claims. Third, the Board rejected Sutton's so-called claim differentiation argument that relies on Sutton's purported motivation for adding a plasticizer in claim 8. Namely, Sutton argued that claim 8 was meant to capture any attempt by a potential infringer to design around the invention by adding trace amounts of plasticizer. In rejecting Sutton's contention, the Board noted that an applicant's rationale for adding a limitation does not provide adequate reason to limit the scope of a broadly drawn claim. Last, the Board found that it did not misapprehend the dispositive issue because the examiner established that the combination of the flexible terpolymer of Backderf and the stable fluorescent dye(s) of White would have been an obvious combination; therefore, any advantages achieved by this obvious combination would have been intrinsic to the final composition.

Sutton timely appealed the Board's decision. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

IV

Whether an invention would have been obvious to one of ordinary skill in the art is a legal determination based on underlying findings of fact. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007). "The presence or absence of a motivation to combine references in an obviousness determination is a pure question of fact." *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000). The PTO first must first carry its burden of demonstrating a prima facie case of obviousness. *In re Mayne*, 104 F.3d 1339, 1341 (Fed. Cir. 1997). Should the PTO succeed, the applicant must then rebut the PTO's showing. *Id.* at 1323.

We review the Board's legal conclusions *de novo* and its factual findings for substantial evidence. *In re Gartside*, 203 F.3d at 1316. Substantial evidence is "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Id.* at 1312 (quoting *Consol. Ed. Co. v. NLRB*, 305 U.S. 197, 229-30 (1938)).

A.

We first turn to two claim scope issues that must be resolved. Sutton asserts that the Board should have interpreted claims 7 and 9 to exclude plasticizers through application of the doctrine of claim differentiation. Sutton next argues that that the Board erred by not interpreting all the claims on appeal to exclude use of HALs. We find no error with the Board's reading of the claims on appeal.

1.

Sutton contends that, because claims 8, 14, 19, and 23 all explicitly disclose a plasticizer, claims 7 and 9 should be interpreted to exclude a plasticizer. During examina-

tion, the PTO and the Board give claims “their broadest reasonable interpretation consistent with the specification.” *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (citation omitted). Claims 7 and 9 both use the transitional term “comprising” prior to reciting the *required* elements of the claimed composition. While the recited elements in claims 7 and 9 are necessary to form the claimed composition, by using the open-ended phrase “comprising,” the claims may include other unclaimed elements, such as a plasticizer. *See Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997) (“‘Comprising’ is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.”).

The '101 application explicitly teaches that the claimed invention may be combined with plasticizers to enhance flexibility. Reading claims 7 and 9 in light of the specification reveals that, while they must include the recited elements, the claimed compositions may also include plasticizers. As such, Sutton’s attempt to limit the scope of claims 7 and 9 to exclude plasticizers, absent specific claim language, must be rejected. Sutton could have limited the scope of claims 7 and 9 by adding an explicit “no plasticizer” limitation, much like he did in claim 30. For whatever reason, Sutton did not choose to impose such a limitation on these claims.

In addition, claim 8 requires a generic plasticizer and claims 14 and 19 require different forms of plasticizers. These claims are narrower than claim 7 because they each require a particular type of plasticizer, while claims 7 and 9 simply permit the use of one. Limiting claims 7 and 9 as Sutton urges would require improperly importing limitations into the claims from the specification which those claims do not recite. Contrary to Sutton’s

position, moreover, a straight-forward application of the doctrine of claim differentiation actually confirms, rather than undermines, this reading of the claims. Claim 30, which expressly excludes a plasticizer, would be superfluous were claims 7 and 9 read to exclude plasticizers.¹

2.

Sutton also appears to contend that all the claims on appeal should be interpreted to exclude the use of HALs. All of the claims use the transitional phrase “comprising” prior to reciting the required elements to compose the claimed vinyl film. Sutton’s specification further suggests the use of HALs, and all but one disclosed experimental embodiment include light stabilizers. Even when discussing the experimental embodiment that did not use any light stabilizer, Sutton disclosed that light stabilizers were generally needed for long term flexibility, even if limited color stability might be achieved without the stabilizer. Reading Sutton’s open-ended claims in light of the specification and disclosed embodiments reveals that their scope is broad enough to include the use of HALs absent explicit claim language to the contrary. Having resolved the claim scope issues, we now turn to Sutton’s arguments regarding the prior art.

B.

Sutton contends that claims 7-9, 14, and 30 are all patentable over the prior art. Sutton presents a series of arguments, many repetitive of one another, attacking the Board’s findings of obviousness. Having thoroughly

¹ Even if Sutton was correct regarding the scope of the claims 7 and 9, it would not affect the Board’s finding of obviousness given that both the examiner and Board found that the combination of Backderf, which disclosed embodiments that exclude the use of plasticizers, and White, renders claim 30 obvious.

reviewed Suttons' briefing and the record in this case, we can divine four primary arguments. First, Sutton argues that the combination of Backderf and White requires both plasticizers and HALs as primary components and, thus, they fail to render the claimed invention obvious. Sutton further asserts that there was no motivation to combine Backderf and White at the time of the invention. Sutton also makes two broad arguments that the Board erred by finding that color stability and flexibility are intrinsically present in the combination of Backderf and White, and that the Board did not consider the invention as a whole. We address each issue in turn.

Sutton explicitly argues that claims 7, 8, 14, 19, and 30 are patentable over the cited prior art because the prior art combinations require use of plasticizers and/or HALs, while his purported invention does not. As previously explained, the scope of Sutton's claims, read in light of the specification, do allow for both plasticizers and/or HALs, with one exception: Claim 30 is the only claim that explicitly eliminates plasticizers. The Board found, however, that Backderf discloses embodiments both with and without plasticizers, rendering all of Sutton's claims, including claim 30, obvious. Backderf, for example, teaches that the claimed elastomers remain flexible without the need for a plasticizer.² *Backderf* at Abstract

² Sutton also argues, for the first time on appeal, that Backderf does not teach that the claimed terpolymer is "sufficiently" flexible. The examiner and the Board did not have an opportunity to provide any factual findings on Sutton's new argument; therefore, we consider this argument waived. *In re Watts*, 354 F.3d 1362, 1368 (Fed. Cir. 2004) ("[W]e decline to consider the appellant's new argument regarding the scope of [the prior art] raised for the first time on appeal. Because the appellant failed to argue his current interpretation of the prior art below, we do not have the benefit of the Board's informed judgment

(“In another embodiment, the overpolymers are flexible without the need for a plasticizer or blending agent.”). Backderf also discloses specific embodiments that omit plasticizers from the composition, yet retain their flexibility. *Id.* at col. 1 ll.21-33 (“In a first embodiment, the elastomer is blended with a plasticizer . . . [i]n another embodiment, the elastomer is not blended with a plasticizer.”). The Board’s rejection of Sutton’s claims is supported by substantial evidence.

Sutton further argues that the Board’s findings are flawed because there was no motivation to combine the fluorescent dye(s) of White with the composition of Backderf at the time of the invention. Sutton’s arguments are mostly directed to the examiner’s citation to the teachings of Ibuki and Halbur. After a review of the record, we conclude that substantial evidence supports the Board’s findings regarding the motivation to combine Backderf and White in light of the well-known principles regarding how plastics and dyes work as taught in Ibuki and Halbur. The Board found, for example, that Ibuki and Halbur demonstrate that UV light will degrade the vinyl chloride component of Backderf’s film, and that fluorescent dyes absorb UV light. Based on these references, the Board readily concluded that a person of ordinary skill would have been motivated to add fluorescent dyes to a plastic film to provide protection from UV light. The Board thus looked to Ibuki and Halbur as teaching references to highlight the knowledge a person of ordinary skill in the art would have had regarding plastics and dyes when reading White.³

on this issue for our review.”); *see also Berman v. Housey*, 291 F.3d 1345, 1354 (Fed. Cir. 2002); *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1426 (Fed. Cir. 1997).

³ To the extent Sutton asserts that the examiner improperly found that Backderf and White inherently

Sutton finally argues that the Board did not consider the claimed invention as a whole, and, instead, used hindsight to combine the prior art. The Board made specific factual findings from the explicit teachings in the prior art, however. The Board did not use Sutton's purported invention as a roadmap to cobble together disparate prior art references for an obviousness combination and we see no reason to disagree with them. As such, substantial evidence supports the Board's findings.

V.

We find that the Board's interpretations of the claim scope on appeal are correct, and that its factual determinations are supported by substantial evidence. The Board's rejection on obviousness grounds is affirmed.

AFFIRMED

COSTS

No costs.

provide color stability without the use of stabilizers, that assertion is irrelevant since, as explained earlier, Sutton's claims do include the use of HALs.