Fingerprints

Case Study PX011

Reactive Surfaces Files Lawsuit Against Toyota
Coatings World, February 28, 2014

A lawsuit has been filed by bio-based additive manufacturer Reactive Surfaces in the Federal District Court for the Western District of Texas. The suit alleges that, although Toyota filed patent applications long after Reactive Surfaces, the United States Patent and Trademark Office incorrectly granted certain patents to Toyota, and that the government agency is continuing to incorrectly grant Toyota patents in view of Reactive Surfaces' own earlier filed U.S. patent applications disclosing and claiming the same inventions. A change in U.S. patent laws – a change that will radically alter US patent laws from a first-to-invent system to one based upon first-to-file - looms very large in this series of legal challenges.

The innovation at the heart of the Reactive Surfaces' suits is a platform technology using biological enzymes entrained in coatings for surfaces like touch screens, mirrors, windows, etc. which cause those surfaces to self-clean themselves from contamination by fingerprints, greasy smudges, makeup, and other natural oils that are otherwise difficult to remove and which significantly deteriorate the view and appearance. There are enormous markets at stake in the automotive industry, the electronics industry, food preparation industry, and more. The Federal lawsuit seeks a ruling from the Court regarding over a half dozen patent interference proceedings that Reactive Surfaces simultaneously filed in opposition to the Toyota patents and patent applications. It also seeks a judgment from the Court that the small company is the rightful inventor of the subject technology, that none of its commercialization efforts such as its eRACE cell phone screen protectors infringe any Toyota patent claim, and that the Toyota patents are invalid and unenforceable.

Dr. Steve McDaniel, founder and chief innovation officer of Reactive Surfaces, "These actions brought by our small cutting-edge start-up company against a mega corporation are existential for us. Our actions against Toyota will air this out thoroughly in the full sunshine of a case presented to a jury of peers, and we strongly believe that we will prevail. We invented enzymatic self-cleaning coatings, not Toyota, and that will be very, very obvious."

Toyota declined to provide comment regarding the lawsuit.

[After, Reactive Surfaces lost in the interference proceedings, it shifted to arguing that the claims in Toyota's patents were invalid on the ground that they were obvious. The outcome of that new strategy is described in the opinion below]

Toyota v. Reactive Surfaces
United States Court of Appeals for the Federal Circuit
July 10, 2020

HUGHES, Circuit Judge.

Toyota Motor Corporation appeals from a Final Written Decision of the Patent Trial and Appeal Board holding that claims 1-11 of U.S. Patent No. 8,394,618 are unpatentable as obvious. Reactive Surfaces Ltd., LLP v. Toyota Motor Corp., No. IPR2016-01914, 2018 Pat. App. LEXIS 4309, 2018 WL 1146318 (P.T.A.B. Mar. 1, 2018) (Board Decision). Because substantial evidence supports the Board's obviousness determination, we affirm.

I

Toyota is a co-owner of the '618 patent, which is directed to the use of lipase enzymes to remove visible fingerprints from surfaces through vaporization. The '618 patent teaches that if lipases are included in a coating or substrate applied to a surface, such as a touchscreen display, these enzymes can degrade lipids in fingerprints placed on the coating into smaller, more volatile molecules that are [**2] more likely to vaporize than the original lipids in the fingerprint, making the fingerprint less visible.

Claim 1 of the '618 patent, the sole independent claim, is representative and the only claim at issue on appeal:

> 1. A method of facilitating the removal of a fingerprint on a substrate or a coating comprising:
>
> providing a substrate or a coating;
>
> associating a lipase with said substrate or said coating such that said lipase is [*482] capable of enzymatically degrading a component of a fingerprint, and
>
> facilitating the removal of a fingerprint by vaporization from the lipase associated substrate or coating when contacted by a fingerprint.

'618 patent at 15:18-26. The '618 patent issued on March 12, 2013. On September 30, 2016, Reactive Surfaces Ltd., LLP filed a petition for inter partes review. Reactive Surfaces asserted that claims 1-11 of the '618 patent are obvious over various combinations of prior art references. The Board instituted review of all eleven claims. As relevant to this appeal, the Board considered whether claim 1 was obvious over U.S. Patent No. 5,868,720 (Van Antwerp).

Van Antwerp teaches a catheter with an enzyme coating that produces lipase compounds. These compounds dissolve obstructions along the catheter lumen. Board Decision, 2018 Pat. App. LEXIS 4309 [WL] at *4. The Board considered Van [**3] Antwerp combined with an article from forensic science literature referred to as Buchanan. Buchanan begins by describing a previous experiment which discovered that "the fingerprints of children disappear from surfaces more quickly than those of adults" and sets forth a study to determine the cause. 2018 Pat. App. LEXIS 4309, [WL] at *6. Buchanan's study compared the composition of samples extracted from adult and child fingertips, finding that "adult fingertips contained higher concentrations of less volatile long chain esters of fatty acids, whereas samples extracted from children's fingertips contained higher levels of relatively volatile free fatty acids." Id. (internal quotation marks omitted). Buchanan teaches that "this difference in composition accounts for the more rapid disappearance

of children's fingerprints from surfaces." Id. The Board found that this combination of prior art taught that "a surface-associated lipase . . . capable of degrading lipids . . . inherently will facilitate the removal of lipid-containing stains, such as fingerprints, by vaporization from the surface." 2018 Pat. App. LEXIS 4309, [WL] at *8.

On March 1, 2018, the Board issued its Final Written Decision, finding claims 1-11 unpatentable as obvious. We have jurisdiction [**4] under 28 U.S.C. § 1295(a)(4)(A).

II

Toyota argues that the Board erred in finding the '618 patent claims obvious. Toyota asserts that the Board erred under two alternative grounds. First, Toyota argues that the Board incorrectly considered Buchanan to be analogous prior art. Second, Toyota argues that even if Buchanan were properly considered analogous prior art, the Board erred in finding that Van Antwerp inherently teaches facilitating the removal of fingerprints in light of Buchanan. We consider each argument in turn.

Although obviousness is ultimately a legal conclusion which we review de novo, we review the Board's underlying factual determinations in an obviousness analysis for substantial evidence. In re Gartside, [*483] 203 F.3d 1305, 1316 (Fed. Cir. 2000). These factual findings include the teachings of prior art and whether a person of ordinary skill in the art would have been motivated to combine prior art references. In re Ethicon, Inc., 844 F.3d 1344, 1349 (Fed. Cir. 2017). "A finding is supported by substantial evidence if a reasonable mind might accept the evidence to support the finding." Id.

A

We first address Toyota's challenge to the Board's finding that Buchanan was analogous prior art. Analogous prior art includes art from the same field as the invention at issue. But it also encompasses references from other [**5] fields if such reference is "reasonably pertinent to the particular problem with which the inventor is involved." Id. (quoting In re Clay, 966 F.2d 656, 658-59 (Fed. Cir. 1992)). "Whether a reference is analogous art is a question of fact." Id. "Generally, a skilled artisan would only have been motivated to combine analogous prior art [references]." Id. Toyota raises multiple arguments in support of its contention that Buchanan should not be considered analogous prior art. However, none of them speak directly to the relevant standard of review: whether the Board's finding to the contrary was supported by substantial evidence.

In determining that Buchanan was analogous prior art, the Board defined the problem with which the inventor of the '618 patent was concerned as "the development of 'materials or coatings that can actively promote the removal of fingerprints on organic surfaces or in organic coatings.'" Board Decision, 2018 Pat. App. LEXIS 4309 [WL] at *7 (quoting '618 patent at 1: 40-42). The Board found that "the substances of which fingerprints are composed" would be highly relevant to one endeavoring to solve the problem of removing fingerprints from a surface or coating. Id. The Board further found that Buchanan—which relates to and is even titled "Chemical characterization of fingerprints from [**6] adults and children"—would have been "[a] natural starting point" for the inventor of the '618 patent. Id. The Board's finding that Buchanan was analogous prior art was based on substantial evidence.

B

Next, Toyota argues in the alternative that the Board erred in finding that Van Antwerp, combined

with Buchanan, inherently teaches the facilitating step of claim 1. It is not disputed that Van Antwerp teaches the first two steps of claim 1: "providing a substrate or a coating" and "associating a lipase with said substrate or said coating such that said lipase is capable of enzymatically degrading a component of a fingerprint[.]" '618 patent at 15:20-23. Toyota argues only that the teachings of Van Antwerp and Buchanan do not render obvious the third step: "facilitating the removal of a fingerprint by vaporization from the lipase associated substrate or coating when contacted by a fingerprint." Id. at 15:24-26.

The Board found that "any combination of prior art that teaches the first two limitations of the challenged claims inherently would teach the [facilitating step]." Board Decision, 2018 Pat. App. LEXIS 4309, [WL] at *8. Substantial evidence supports this finding. The inherent teachings of prior art references are questions of fact. In re Napier, 55 F.3d 610, 613 (Fed. Cir. 1995). "[I]n order to rely [**7] on inherency to establish the existence of a [*484] claim limitation in the prior art in an obviousness analysis," a party must show that "the limitation at issue necessarily must be present, or the natural result of the combination of elements explicitly disclosed by the prior art." Par Pharm., Inc. v. TWi Pharms., Inc., 773 F.3d 1186, 1195-96 (Fed. Cir. 2014). This is an exacting standard which cannot be met by a showing of "probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Hansgirg v. Kemmer, 102 F.2d 212, 213, 26 C.C.P.A. 937, 1939 Dec. Comm'r Pat. 327 (CCPA 1939).

In its analysis of the inherent teachings of the prior art, the Board cited Buchanan and the testimony of Reactive Surfaces' expert, Dr. Rozzell, as evidence that an artisan would have known that fingerprints contain lipids. Board Decision, 2018 Pat. App. LEXIS 4309, [WL] at *7. The Board also cited Dr. Rozzell's testimony that "it was well known that a lipase would degrade a lipid . . . since the early 1900s[.]" Id. (internal quotation marks omitted). Finally, the Board cited Dr. Rozzell's testimony that "fingerprints with lower concentrations of low-volatility components would disappear more quickly via vaporization than fingerprints with higher concentrations of those same components, as well as that the action of lipases on fingerprint lipids would cause low-volatility [**8] components to break down into smaller, higher volatility components." Id. The Board found her testimony supported by Buchanan. Id. The Board thus concluded that Van Antwerp's teaching of the first two steps of claim 1 inherently teaches the third step because "if a surface-associated lipase is capable of degrading lipids, it inherently will facilitate the removal of lipid-containing stains, such as fingerprints, by vaporization from the surface." 2018 Pat. App. LEXIS 4309, [WL] at *8.

Toyota's arguments to the contrary are unpersuasive. Toyota argues first that Buchanan does not consider how a fingerprint appears to the "naked eye," and second that Buchanan's teachings are speculative. As to the first, the Board's conclusion that Buchanan relates to visible fingerprints is supported by substantial evidence. Buchanan is concerned with the "disappearance of latent fingerprints from surfaces"; "allowing fingerprints to be observed over longer periods of time"; and "the disappearance of fingerprints from crime scenes." J.A. 837. As to the second, Toyota points to two sentences of Buchanan as evincing that "Buchanan merely speculates that some fingerprints seem to 'disappear' from crime scenes faster than others because they [**9] contain fewer [low-volatility] lipids," Appellant's Br. 52-53 (emphasis in original). However, Buchanan also states that "the higher levels of the [low-volatility lipids] found in adult fingerprints would remain on the surface longer, allowing fingerprints to be observed over longer periods of time." J.A. 837. This clear, non-speculative teaching of Buchanan supports the Board's finding of the inherent teachings of the prior art. Thus, substantial evidence supports the Board's determination

that the prior art taught the facilitating step of claim 1.

III

We have considered Toyota's remaining arguments and find them unpersuasive. For the foregoing reasons, we affirm the Board's decision.

AFFIRMED