# United States Court of Appeals for the Federal Circuit

2007-1515

LEGGETT & PLATT, INCORPORATED
and L&P PROPERTY MANAGEMENT COMPANY,

Plaintiffs-Appellants,

v.

VUTEK, INC.,

Defendant-Appellee.

David A. Roodman, Bryan Cave LLP, of St. Louis, Missouri, argued for plaintiffs-appellants. With him on the brief was K. Lee Marshall.

Russell B. Hill, Howrey LLP, of Irvine, California, argued for defendant-appellee. With him on the brief were William C. Rooklidge, Michael J. Stimson, and Alyson G. Barker.

Appealed from: United States District Court for the Eastern District of Missouri

Judge Catherine D. Perry

# United States Court of Appeals for the Federal Circuit

2007-1515

LEGGETT & PLATT, INCORPORATED
and L&P PROPERTY MANAGEMENT COMPANY,

Plaintiffs-Appellants,

v.

VUTEK, INC.,

Defendant-Appellee.

Appeal from the United States District Court for the Eastern District of Missouri in case no. 4:05-CV-788, Judge Catherine D. Perry.

---

DECIDED: August 21, 2008

---

Before BRYSON, Circuit Judge, ARCHER, Senior Circuit Judge, and PROST, Circuit Judge.

PROST, Circuit Judge.

Plaintiffs-Appellants Leggett & Platt, Inc. and L&P Property Management Co. (collectively, "L&P") sued Defendant-Appellee VUTEk, Inc. ("VUTEk") alleging that certain of VUTEk's large-scale printers infringe claims 1-3, 7, 9-10, and 19 of L&P's U.S. Patent No. 6,755,518 (the "'518 patent"). VUTEk filed a motion for summary judgment alleging that the asserted claims of the '518 patent are invalid. The district court granted VUTEk's motion, finding claims 1, 9, 10, and 19 of the '518 patent to be anticipated by a prior VUTEk patent and claims 2, 3, and 7 to be obvious in light of a combination of two prior VUTEk patents. Leggett & Platt, Inc. v. VUTEk, Inc., No. 4:05-CV-788, slip op. (E.D. Miss. Dec. 26, 2006) ("Summary Judgment Order"). Because we

conclude that the district court properly granted summary judgment of invalidity, we affirm.

I

The ’518 patent, entitled “Method and Apparatus for Ink Jet Printing on Rigid Panels,” describes a method and apparatus for printing ink on a rigid, deformable substrate without causing the substrate to deform, even temporarily. A deformable substrate is a material that has a tendency to bend, ripple, warp, or otherwise deform when it is exposed to radiant energy, such as heat or infrared (“IR”) radiation. To print on such a substrate, the ’518 patent describes the use of a “UV curable” ink—which can be cured (i.e., dried) by exposure to ultraviolet (“UV”) radiation—and a “cold UV” radiation source. Where some “hot” sources of UV radiation will emit non-UV radiation that can heat and deform the substrate, a “cold UV” radiation source can substantially cure the ink without deforming the substrate. The ’518 patent also teaches that, shortly after the UV curable ink is deposited on the substrate, the cold UV radiation source “freezes” the ink in place to prevent the ink from spreading, wicking, or otherwise moving on the substrate. Because the height of the substrate may vary, the ’518 patent also provides techniques for maintaining a constant distance between the ink jet’s printheads and the substrate.

In May 2005, L&P filed suit in the United States District Court for the Eastern District of Missouri, alleging that VUTEk’s PressVu UV printers infringe L&P’s ’518 patent. Specifically, L&P alleged that VUTEk was infringing independent claims 1 and 10 and dependent claims 2, 3, 7, 9, and 19 of the ’518 patent. Independent claim 1 is representative of these claims for the purposes of this appeal. It recites:

> A method of ink jet printing UV curable ink from an ink jet printhead onto a rigid substrate formed of a material that has a tendency to at least temporarily deform in the direction of printhead if exposed to radiant curing energy while at a printing station, the method comprising:
>
> moving a printhead carriage having an ink jet printhead thereon approximately parallel to a substrate at a printing station;
>
> jetting ink from the head onto the surface of a substrate;
>
> providing at least one cold UV curing assembly on the carriage, adjacent to and moveable with the printhead, and oriented to direct UV energy onto the surface of the substrate at the printing station sufficiently close to where ink is being jetted onto the surface to freeze dots of the jetted ink on the surface; and
>
> the cold UV assembly being effective to impinge sufficient UV light on the ink to substantially cure the ink without impinging radiation that would heat the substrate so as to deform it, even temporarily, while at the printing station.

'518 patent col.9 ll.6-25 (emphases added).

The district court held a Markman hearing in April 2006 and subsequently issued an order construing the disputed terms and phrases of the '518 patent. Leggett & Platt, Inc. v. VUTEk, Inc., No. 4:05-CV-788 (E.D. Miss. May 25, 2006) ("Markman Order"). Three of these claim constructions are at issue on appeal: (1) cold UV, (2) freeze dots of the jetted ink, and (3) substantially cure. First, the district court construed the claim term "cold UV" to mean "an ultraviolet light source which: (i) employs selected wavelengths to limit; or (ii) has been adapted to selectively reduce the amount of; radiation (and thus heat) that impinges upon a substrate." Id. at 5-9, 27-28. Next, the district court ruled that the phrase "freeze dots of the jetted ink" means "to sufficiently cure the dots of ink such that they will not spread, wick, or otherwise move on the substrate." Id. at 17-18, 28. Finally, the district court construed the phrase "substantially cure" to mean "cured to a great extent or almost completely cured." Id. at 18-25, 28.

In October 2006, the parties filed cross motions for summary judgment on the issue of infringement, and VUTEk filed a motion for summary judgment of invalidity. The district court granted VUTEk's motion on invalidity and deemed the remaining motions moot. Summary Judgment Order at 23-24. In its motion, VUTEk asserted that claims 1-3, 7, 9-10, and 19 of the '518 patent are invalid because they are anticipated or obvious, indefinite, and lack written description. See id. at 1-2. The district court found the asserted claims to be invalid on two of these grounds. Id. at 2. First, the district court first concluded that claims 1, 9, 10, and 19 of the '518 patent are invalid as anticipated by VUTEk's U.S. Patent No. 6,457,823 (the "'823 patent") and claims 2, 3, and 7 are invalid as obvious in light of a combination of the '823 patent and VUTEk's U.S. Patent No. 6,616,355 (the "'355 patent"). Id. at 5-18. "Alternatively," the district court "reluctantly" agreed that these claims are invalid as indefinite because the terms "deform, deforming, and deformation," which are present in each claim, "are not capable of being construed in a way that meets the definiteness requirement of [35 U.S.C.] § 112." Id. at 18-23.

For these reasons, the district court granted VUTEk's motion for summary judgment of invalidity. Id. at 23. The district court then entered final judgment, declaring claims 1-3, 7, 9-10, and 19 of the '518 patent invalid. Leggett & Platt, Inc. v. VUTEk, Inc., No. 4:05-CV-788 (E.D. Miss. July 9, 2007). L&P timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

II

This court reviews a district court's grant of summary judgment de novo. Innogenetics, N.V. v. Abbott Labs., 512 F.3d 1363, 1378 (Fed. Cir. 2008). "In

determining whether there is a genuine issue of material fact, we view the evidence in the light most favorable to the party opposing the motion, with doubts resolved in favor of the nonmovant." Baxter Int'l, Inc. v. COBE Labs., Inc., 88 F.3d 1054, 1057 (Fed. Cir. 1996); see Fed. R. Civ. P. 56(c). While anticipation is a question of fact, "it may be decided on summary judgment if the record reveals no genuine dispute of material fact." Golden Bridge Tech., Inc. v. Nokia, Inc., 527 F.3d 1318, 1321 (Fed. Cir. 2008).

As noted above, the district court found: (1) claims 1, 9, 10, and 19 of the '518 patent to be anticipated by VUTEk's '823 patent, and (2) claims 2, 3, and 7 to be obvious in light of a combination of VUTEk's '823 patent and VUTEk's '355 patent. Summary Judgment Order at 2, 5-18. L&P appeals both findings. We turn first to whether the district court erred in concluding that claims 1, 9, 10, and 19 are anticipated as a matter of law.

As noted above, claim 1 is representative for the purposes of L&P's arguments on appeal. It requires "at least one cold UV curing assembly" that is "adjacent to and moveable with the printhead." '518 patent col.9 ll.15-16. It specifies that this cold UV curing assembly is "oriented to direct UV energy . . . to freeze dots of the jetted ink" and "effective to impinge sufficient UV light on the ink to substantially cure the ink." Id. at col.9 ll.17-22. L&P's argument on appeal is that VUTEk's '823 patent fails to disclose these claimed aspects and, thus, cannot anticipate.

The '823 patent describes a printer carriage that includes one or more inkjet printheads and one or more UV radiation sources for setting ink after it has been deposited onto a substrate. '823 patent col.3 ll.59-66, col.4 ll.60-64. These UV radiation sources may be light emitting diodes ("LEDs"), id. at col.2 ll.4-12, which the

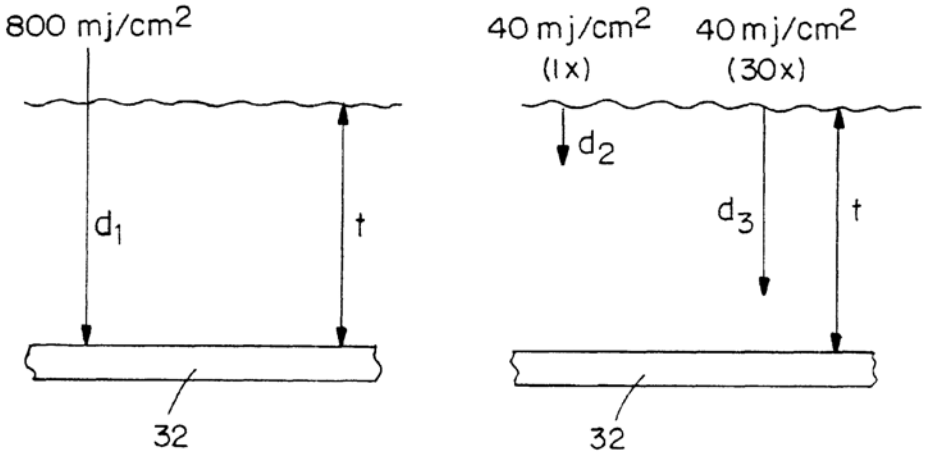
parties agree qualify as "cold UV," see Summary Judgment Order at 7. The '823 patent teaches that these UV radiation sources should emit enough energy to "set" the deposited ink when the carriage is operating at the fastest possible speed (i.e., 50 watts per inch).[1] '823 patent col.5 ll.3-16. Deposited ink is "set" or pre-cured "so that the ink does not spread or ball up, even though it is still in a quasi-fluid state." Id. at col.1 ll.50-53. The parties equate setting the ink (in the '823 patent) and freezing the ink (in the '518 patent).

In order to ensure that deposited ink is not underexposed, the UV sources will emit radiation over an area that is wider than the printheads. Id. at col.5 ll.20-34. As a result, some regions of ink will be exposed to radiation twice. Id. If the various different colors of inkjet printheads are configured in a desirable way, some overlap regions will be exposed to the UV radiation five times. Id. at col.5 ll.35-46. While it may appear that these regions will receive an excessive amount of energy if the carriage is operating as the slowest speed, the '823 patent clarifies that effect of multiple passes is not linearly additive.[2] Id. at col.5 ll.47-57. As the '823 patent shows in figures 7A & 7B (reproduced below), when ink is exposed to the UV radiation five separate times at the slowest

[1] The carriage speed may range from about 10 inches per second to about 60 inches per second. '823 patent col.5 ll.6-8. In order to provide 40 mj/cm$^2$ (the energy required to set the ink) when the carriage is operating at the highest speed, the UV radiation sources "must emit at about 50W/inch." Id. at col.5 ll.8-12, 47-48.

[2] If, instead, the effect were linearly additive, the ink would be exposed to more energy than is even required to fully cure the ink. '823 patent col.5 ll.47-57. At the lowest carriage speed (10 inches per second), the UV radiation source imparts 240 mj/cm$^2$ to the ink on each pass. Id. at col.5 ll.12-16. With five passes, 1200 mj/cm$^2$ (i.e., 240 * 5 = 1200) would be imparted to the ink if the effect were linearly additive; however, only 800 mj/cm$^2$ is necessary to fully cure the ink. Id. at col.5 l.47–col.6 l.3.

carriage speed, the radiant energy only penetrates the ink to a depth $d_3$.[3] Id. at fig. 7B, col.5 ll.58-67. While this depth ($d_3$) is more than the depth required to set the ink ($d_2$), it is still less than the depth required to cure the ink ($d_1$). Id.; see id. at fig. 7A. To fully cure the ink, the radiant energy must penetrate the ink (with depth "t") to the substrate (32). Id. at col.5 ll.58-63.




Figures 7A & 7B

VUTEk asserts that this disclosure in the '823 patent anticipates the disputed portion of claim 1—a cold UV curing assembly that is "oriented to direct UV energy . . . to freeze dots of the jetted ink" and "effective to impinge sufficient UV light on the ink to substantially cure the ink." '518 patent col.9 ll.17-22. The parties agree that the UV radiation source disclosed by the '823 patent consists of LEDs, that LEDs are "cold UV," and that these LEDs are "oriented to direct UV energy . . . to freeze dots of the jetted ink." L&P, however, asserts that this disclosure fails to teach that the LEDs are "effective to impinge sufficient UV light on the ink to substantially cure the ink."

[3] Figure 7B identifies $d_3$ as "30x" because the slowest carriage speed is six times slower than the fastest carriage speed (6x) and the ink is exposed five times (5x)—six multiplied by five is thirty (30x). See '823 patent col.5 ll.47-57. L&P's assertion that $d_3$ represents thirty separate passes of the printhead is simply without support in the reference.

As noted above, the district court construed the term "substantially cure" to mean "cured to a great extent or almost completely cured."[4] Markman Order at 25. Thus, the relevant portion of claim 1 simply requires a cold UV source (e.g., LEDs) that is "effective to impinge sufficient UV light on the ink" to cure the ink to a great extent or almost completely cure it. Moreover, because the claim is written with functional rather than structural language—it requires the cold UV assembly to be "effective to" substantially cure rather than requiring ink to be substantially cured—the claim limitation will be anticipated so long as the LEDs disclosed in the '823 patent are able to cure the ink to a great extent. See In re Schreiber, 128 F.3d 1473, 1478 (Fed. Cir. 1997) (explaining a risk of functional claiming is that the functional limitation may be an inherent characteristic of the prior art). Against this backdrop, we turn to our analysis.

Figure 7B shows that the LEDs will cure the ink 75-80% (as indicated by line $d_3$) when the printer carriage is operating at the slowest speed and passes over the ink five times. '823 patent fig. 7B, col.5 ll.64-67; see J.A. 2192 (testimony from L&P's expert that $d_3$ represents 75-80% cured). A reasonable mind might well find 75-80% cured to be "substantially cured" and, thus, would conclude that the disclosed LEDs are effective to cure the ink to a great extent. To grant summary judgment, however, we must conclude "that even if all material factual inferences are drawn in favor of the non-movant, there is no reasonable basis on which the non-movant can prevail." Scripps Clinic & Research Found. v. Genentech, Inc., 927 F.2d 1565, 1576 (Fed. Cir. 1991).

[4] In its brief, VUTEk challenged the district court's construction of the term "substantially cure." At oral argument, however, VUTEk conceded that this issue is not properly before us because VUTEk does not contend that the anticipation analysis depends upon the construction of this term.

Under this strict standard, we cannot say that, as a matter of law, 75-80% cured is "cured to a great extent or almost completely cured."

We can, however, conclude as a matter of law that the '823 patent inherently discloses LEDs that are "effective to impinge sufficient UV light on the ink to" cure the ink to a great extent. "Under the principles of inherency, if the prior art necessarily functions in accordance with, or includes, the claims limitations, it anticipates." Perricone v. Medicis Pharm. Corp., 432 F.3d 1368, 1376 (Fed. Cir. 2005) (quoting In re Cruciferous Sprout Litig., 301 F.3d 1343, 1349 (Fed. Cir. 2002)). "Thus, a prior art reference may anticipate when the claim limitation or limitations not expressly found in that reference are nonetheless inherent in it." MEHL/Biophile Int'l Corp. v. Milgraum, 192 F.3d 1362, 1365 (Fed. Cir. 1999). In other words, the '823 patent will anticipate by inherency if its LEDs necessarily are "effective to impinge sufficient UV light on the ink to substantially cure the ink."

In figures 7A & 7B and the associated discussion, the '823 patent teaches that, if a UV radiation source is passed over the ink at a slower speed and/or multiple times, the degree to which the ink is cured will increase. See '823 patent figs. 7A-7B, col.5 ll.58-67 (comparing a full cure, $d_1$, with one pass at high speed, $d_2$, with five passes at low speed, $d_3$). One of ordinary skill in the art, reading this disclosure, could only conclude that more passes and/or a slower carriage speed would result in an increasing degree of cure, albeit not linearly increasing. As the district court noted, VUTEk's expert testified that multiple passes would result in a substantial cure, and L&P's expert even acknowledged that there is some cumulative effect to multiple passes. Moreover, the '823 patent later expressly discloses that "LEDs . . . [can be] used to cure and/or set the

ink." Id. at col.6 ll.25-30. Thus, while the '823 patent may not expressly disclose that the LEDs cure the ink to a great extent, it inherently discloses LEDs that are "effective to" do so. See In re Schreiber, 128 F.3d at 1478 (concluding that prior art inherently taught the patent's requirement that the claimed device "allows several kernels of popped popcorn to pass through at the same time" while "permit[ting] the dispensing of only a few kernels" at a time).

L&P fails to raise a disputed issue of material fact with regard to whether the '823 patent anticipates. It argues, for example, that the '823 patent does not inherently disclose LEDs that are able to substantially cure the ink because LEDs were unable to do so at the time. In support, L&P relies on its expert's testimony that "LEDs were not capable of emitting sufficient radiation to cure." We are not persuaded, however, by L&P's repeated efforts to conflate "substantially cure" and simply "cure." The claim speaks of substantially curing, not fully curing, and VUTEk's expert asserts that the difference is significant. L&P's expert also asserts that the power output by a 290 nanometer "UV semiconductor optical device[]" was insufficient to cure the ink even two years after the '823 patent was filed. The disclosure of the '823 patent, however, is directed to multiple LEDs emitting at a 365 nanometer wavelength, and it expressly states that this UV radiation source emits 50 watts per inch, which is significantly more energy than the 290-nanometer semiconductor optical device referenced by L&P's expert. '823 patent col.5 ll.8-12 (UV radiation sources emit 50 watts per inch), id. at col.6 ll.4-16 (UV radiation sources are 365-nanometer LEDs). Finally, L&P points to the testimony of VUTEk's expert, who admitted LEDs were not "practical" for use in printers at the time because they were too expensive. The fact that a technology may be

impractical does not undermine an otherwise anticipatory disclosure. Celeritas Techs., Ltd. v. Rockwell Int'l Corp., 150 F.3d 1354, 1361 (Fed. Cir. 1998) ("The fact that a modem with a single carrier data signal is shown to be less than optimal does not vitiate the fact that it is disclosed."). Moreover, we have previously rejected "the contention that inherent anticipation requires recognition in the prior art." Schering Corp. v. Geneva Pharm., Inc., 339 F.3d 1373, 1377 (Fed. Cir. 2003). Accordingly, L&P's proffered evidence does not refute VUTEk's expert's testimony that multiple passes by the disclosed LEDs would eventually result in a substantial cure. As a result, L&P fails to create a question of fact sufficient to survive summary judgment.

L&P's other arguments are also unpersuasive. First, L&P notes that the '823 patent clarifies that "the energy the ink receives is sufficient to set the ink but not to cure it," which allegedly shows that the '823 patent does not teach LEDs effective to substantially cure the ink. '823 patent col.6 ll.1-3 (emphasis added). As we noted above, however, the difference between substantial cure and full cure is not insubstantial. L&P also argues that the reference does not anticipate because it repeatedly discusses using the LEDs to set and a downstream curing station to subsequently cure the ink. This argument relies on the erroneous assumption that the disclosure of multiple examples renders one example less anticipatory. See Perricone, 432 F.3d at 1376 (rejecting the argument that one example "cannot anticipate because it appears without special emphasis in a longer list" because a "disclosure is prior art to the extent of its enabling disclosure"). L&P also argues that the '823 patent expressly teaches away from using LEDs to substantially cure the ink, but "teaching away" is irrelevant to anticipation. Celeritas Techs., 150 F.3d at 1361 ("[T]he question whether a

reference 'teaches away' from the invention is inapplicable to an anticipation analysis."). Finally, L&P repeatedly compares the purpose of the '823 patent to the purpose of the '518 patent, but we fail to see how this comparison proves that the latter's claim is not anticipated by the former's disclosure.

L&P also asserts that the district court erred by allegedly concluding that the '823 patent inherently taught the disputed aspects because "the patent reveals the possibility, which is all that is necessary." See Summary Judgment Order at 11. Our law is clear—the fact that a claim limitation may be present in a reference does not establish that the reference inherently discloses that limitation. MEHL/Biophile, 192 F.3d at 1365. After reviewing the context of this statement, however, we understand that the district court found that the reference disclosed the limitation as a "possibility" in the sense that an embodiment is one of the possibilities (or examples) disclosed by a patent. We conclude that this analysis, in its entirety, does not run afoul of our basic rule.

Accordingly, we conclude that the district court did not err in finding claims 1, 9, 10, and 19 of the '518 patent to be anticipated by VUTEk's '823 patent. While L&P also appeals the district court's finding that dependent claims 2, 3, and 7 are rendered obvious by a combination of VUTEk's '823 patent and VUTEk's '355 patent, L&P's only argument is that the obviousness finding is based on the allegedly erroneous anticipation finding. So, because we perceive no error in the anticipation finding, we conclude that the district court did not err in finding claims 2, 3, and 7 to be obvious in light of a combination of VUTEk's '823 patent and VUTEk's '355 patent.

III

For the above reasons, we affirm the district court's grant of summary judgment that claims 1-3, 7, 9-10, and 19 of the '518 patent are either anticipated by the '823 patent or rendered obvious in light of the '823 patent and the '355 patent. Because we affirm the district court's original basis for granting VUTEk's motion for summary judgment of invalidity—i.e., that claims 1-3, 7, 9-10, and 19 of the '518 patent are invalid for anticipation and obviousness—we need not address L&P's appeal of the court's alternative basis for granting this motion—i.e., that these claims are invalid for indefiniteness. Accordingly, we affirm the district court's final judgment and declaration that claims 1-3, 7, 9-10, and 19 of the '518 patent are invalid.

AFFIRMED