



Supreme Court of the United States
WARNER-JENKINSON COMPANY, INC., Petitioner
v.
HILTON DAVIS CHEMICAL CO.

No. 95-728.
Argued Oct. 15, 1996.
Decided March 3, 1997.

Justice THOMAS delivered the opinion of the Court.

Nearly 50 years ago, this Court in *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 70 S.Ct. 854, 94 L.Ed. 1097 (1950), set out the modern contours of what is known in patent law as the “doctrine of equivalents.” Under this doctrine, a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is “equivalence” between the elements of the accused product or process and the claimed elements of the patented invention. Petitioner, which was found to have infringed upon respondent’s patent under the doctrine of equivalents, invites us to speak the death of that doctrine. We decline that invitation. The significant disagreement within the Court of Appeals for the Federal Circuit concerning the application of *Graver Tank* suggests, however, that the doctrine is not free from confusion. We therefore will endeavor to clarify the proper scope of the doctrine.

I

The essential facts of this case are few. Petitioner Warner-Jenkinson Co. and respondent Hilton Davis Chemical Co. manufacture dyes. Impurities in those dyes must be removed. Hilton Davis holds United States Patent No. 4,560,746 ('746 patent), which discloses an improved purification process involving “ultrafiltration.” The '746 process filters impure dye through a porous membrane at certain pressures and pH levels, resulting in a high purity dye product.

The '746 patent issued in 1985. As relevant to this case, the patent claims as its invention an improvement in the ultrafiltration process as follows:

“In a process for the purification of a dye ... the improvement which comprises: subjecting an aqueous solution ... to ultrafiltration through a membrane having a nominal pore diameter of 5-15 Angstroms under a hydrostatic pressure of approximately 200 to 400 p.s.i.g., at a pH from approximately 6.0 to 9.0, to thereby cause separation of said impurities from said dye....” App. 36-37 (emphasis added).

The inventors added the phrase “at a pH from approximately 6.0 to 9.0” during patent prosecution. At a minimum, this phrase was added to distinguish a previous patent (the “Booth” patent) that disclosed an ultrafiltration process operating at a pH above 9.0. The parties disagree as to why the low-end pH limit of 6.0 was included as part of the claim. Petitioner contends that the lower limit was added because below a pH of 6.0 the patented process created “foaming” problems in the plant and because the process was not shown to work below that pH level. Respondent counters that the process was successfully tested to pH levels as low as 2.2 with no effect on the process because of foaming, but offers no particular explanation as to why the lower level of 6.0 pH was selected.

In 1986, Warner-Jenkinson developed an ultrafiltration process that operated with membrane pore diameters assumed to be 5-15 Angstroms, at pressures of 200 to nearly 500 p.s.i.g., and at a pH of 5.0. Warner-Jenkinson did not learn of the '746 patent until after it had begun commercial use of its ultrafiltration process. Hilton Davis eventually learned of Warner-Jenkinson's use of ultrafiltration and, in 1991, sued Warner-Jenkinson for patent infringement.

As trial approached, Hilton Davis conceded that there was no literal infringement, and relied solely on the doctrine of equivalents. Over Warner-Jenkinson's objection that the doctrine of equivalents was an equitable doctrine to be applied by the court, the issue of equivalence was included among those sent to the jury. The jury found that the '746 patent was not invalid and that Warner-Jenkinson infringed upon the patent un-

der the doctrine of equivalents. The jury also found, however, that Warner-Jenkinson had not intentionally infringed, and therefore awarded only 20% of the damages sought by Hilton Davis. The District Court denied Warner-Jenkinson's post-trial motions, and entered a permanent injunction prohibiting Warner-Jenkinson from practicing ultrafiltration below 500 p.s.i.g. and below 9.01 pH. A fractured en banc Court of Appeals for the Federal Circuit affirmed.

The majority below held that the doctrine of equivalents continues to exist and that its touchstone is whether substantial differences exist between the accused process and the patented process. The court also held that the question of equivalence is for the jury to decide and that the jury in this case had substantial evidence from which it could conclude that the Warner-Jenkinson process was not substantially different from the ultrafiltration process disclosed in the '746 patent.

There were three separate dissents, commanding a total of 5 of 12 judges. Four of the five dissenting judges viewed the doctrine of equivalents as allowing an improper expansion of claim scope, contrary to this Court's numerous holdings that it is the claim that defines the invention and gives notice to the public of the limits of the patent monopoly. The fifth dissenter, the late Judge Nies, was able to reconcile the prohibition against enlarging the scope of claims and the doctrine of equivalents by applying the doctrine to each element of a claim, rather than to the accused product or process "overall." As she explained it: "The 'scope' is not enlarged if courts do not go beyond the substitution of equivalent elements." All of the dissenters, however, would have found that a much narrowed doctrine of equivalents may be applied in whole or in part by the court.

We granted certiorari, and now reverse and remand.

II

In *Graver Tank* we considered the application of the doctrine of equivalents to an accused chemical composition for use in welding that differed from the patented welding material by the substitution of one chemical element. The substituted element did not fall within the literal terms of the patent claim, but the Court nonetheless found that the "question which thus emerges is whether the substitution [of one element

for the other] ... is a change of such substance as to make the doctrine of equivalents inapplicable; or conversely whether under the circumstances the change was so insubstantial that the trial court's invocation of the doctrine of equivalents was justified." The Court also described some of the considerations that go into applying the doctrine of equivalents:

"What constitutes equivalency must be determined against the context of the patent, the prior art, and the particular circumstances of the case. Equivalence, in the patent law, is not the prisoner of a formula and is not an absolute to be considered in a vacuum. It does not require complete identity for every purpose and in every respect. In determining equivalents, things equal to the same thing may not be equal to each other and, by the same token, things for most purposes different may sometimes be equivalents. Consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with the other ingredients, and the function which it is intended to perform. An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was."

Considering those factors, the Court viewed the difference between the chemical element claimed in the patent and the substitute element to be "colorable only," and concluded that the trial court's judgment of infringement under the doctrine of equivalents was proper.

A

Petitioner's primary argument in this Court is that the doctrine of equivalents, as set out in *Graver Tank* in 1950, did not survive the 1952 revision of the Patent Act, because it is inconsistent with several aspects of that Act. In particular, petitioner argues: (1) The doctrine of equivalents is inconsistent with the statutory requirement that a patentee specifically "claim" the invention covered by a patent, § 112; (2) the doctrine circumvents the patent reissue process—designed to correct mistakes in drafting or the like—and avoids the express limitations on that process, §§ 251-252; (3) the doctrine is inconsistent with the primacy of the Patent and Trademark Office (PTO) in setting the scope of a patent through the patent prosecution process; and (4) the doctrine was implicitly rejected as a general matter by Congress' specific and limited in-

clusion of the doctrine in one section regarding “means” claiming, § 112, ¶ 6. All but one of these arguments were made in *Graver Tank* in the context of the 1870 Patent Act, and failed to command a majority.

B

We do, however, share the concern of the dissenters below that the doctrine of equivalents, as it has come to be applied since *Graver Tank*, has taken on a life of its own, unbounded by the patent claims. There can be no denying that the doctrine of equivalents, when applied broadly, conflicts with the definitional and public-notice functions of the statutory claiming requirement. Judge Nies identified one means of avoiding this conflict:

“[A] distinction can be drawn that is not too esoteric between substitution of an equivalent for a component *in* an invention and enlarging the metes and bounds of the invention *beyond* what is claimed.

.....

“Where a claim to an invention is expressed as a combination of elements, as here, ‘equivalents’ in the sobriquet ‘Doctrine of Equivalents’ refers to the equivalency of an *element* or *part* of the invention with one that is substituted in the accused product or process.

.....

“This view that the accused device or process must be more than ‘equivalent’ *overall* reconciles the Supreme Court’s position on infringement by equivalents with its concurrent statements that ‘the courts have no right to enlarge a patent beyond the scope of its claims as allowed by the Patent Office.’ [Citations omitted.] The ‘scope’ is not enlarged if courts do not go beyond the substitution of equivalent elements.”

We concur with this apt reconciliation of our two lines of precedent. Each element contained in a patent claim is deemed material to defining the scope of the patented invention, and thus the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole. It is important

to ensure that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety. So long as the doctrine of equivalents does not encroach beyond the limits just described, or beyond related limits, we are confident that the doctrine will not vitiate the central functions of the patent claims themselves.

III

Understandably reluctant to assume this Court would overrule *Graver Tank*, petitioner has offered alternative arguments in favor of a more restricted doctrine of equivalents than it feels was applied in this case. We address each in turn.

A

Petitioner first argues that *Graver Tank* never purported to supersede a well-established limit on nonliteral infringement, known variously as “prosecution history estoppel” and “file wrapper estoppel.” According to petitioner, any surrender of subject matter during patent prosecution, regardless of the reason for such surrender, precludes recapturing any part of that subject matter, even if it is equivalent to the matter expressly claimed. Because, during patent prosecution, respondent limited the pH element of its claim to pH levels between 6.0 and 9.0, petitioner would have those limits form bright lines beyond which no equivalents may be claimed. Any inquiry into the reasons for a surrender, petitioner claims, would undermine the public’s right to clear notice of the scope of the patent as embodied in the patent file.

We can readily agree with petitioner that *Graver Tank* did not dispose of prosecution history estoppel as a legal limitation on the doctrine of equivalents. But petitioner reaches too far in arguing that the reason for an amendment during patent prosecution is irrelevant to any subsequent estoppel. In each of our cases cited by petitioner and by the dissent below, prosecution history estoppel was tied to amendments made to avoid the prior art, or otherwise to address a specific concern—such as obviousness—that arguably would have rendered the claimed subject matter unpatentable. Chief Justice Stone distinguished inclusion of a limiting phrase in an original patent claim from the “very different” situation in which “the applicant, in order to meet objections in the Patent Office, *based on references to the prior art*, adopted the phrase as a substitute for the broader one” previ-

ously used.

It is telling that in each case this Court probed the reasoning behind the Patent Office's insistence upon a change in the claims. In each instance, a change was demanded because the claim as otherwise written was viewed as not describing a patentable invention at all—typically because what it described was encompassed within the prior art. But, as the United States informs us, there are a variety of other reasons why the PTO may request a change in claim language. And if the PTO has been requesting changes in claim language without the intent to limit equivalents or, indeed, with the expectation that language it required would in many cases allow for a range of equivalents, we should be extremely reluctant to upset the basic assumptions of the PTO without substantial reason for doing so. Our prior cases have consistently applied prosecution history estoppel only where claims have been amended for a limited set of reasons, and we see no substantial cause for requiring a more rigid rule invoking an estoppel regardless of the reasons for a change.

In this case, the patent examiner objected to the patent claim due to a perceived overlap with the Booth patent, which revealed an ultrafiltration process operating at a pH above 9.0. In response to this objection, the phrase “at a pH from approximately 6.0 to 9.0” was added to the claim. While it is undisputed that the upper limit of 9.0 was added in order to distinguish the Booth patent, the reason for adding the lower limit of 6.0 is unclear. The lower limit certainly did not serve to distinguish the Booth patent, which said nothing about pH levels below 6.0. Thus, while a lower limit of 6.0, by its mere inclusion, became a material *element* of the claim, that did not necessarily preclude the application of the doctrine of equivalents as to that element. Where the reason for the change was not related to avoiding the prior art, the change may introduce a new element, but it does not necessarily preclude infringement by equivalents of that element.^F

We are left with the problem, however, of what to do in a case like the one at bar, where the record seems not to reveal the reason for including the lower pH limit of 6.0. In our view, holding that certain reasons for a claim amendment may avoid the application of prosecution history estoppel is not tantamount to holding that the *absence* of a reason for an amendment may similarly avoid such an estoppel. Mindful that

claims do indeed serve both a definitional and a notice function, we think the better rule is to place the burden on the patent holder to establish the reason for an amendment required during patent prosecution. The court then would decide whether that reason is sufficient to overcome prosecution history estoppel as a bar to application of the doctrine of equivalents to the element added by that amendment. Where no explanation is established, however, the court should presume that the patent applicant had a substantial reason related to patentability for including the limiting element added by amendment. In those circumstances, prosecution history estoppel would bar the application of the doctrine of equivalents as to that element. The presumption we have described, one subject to rebuttal if an appropriate reason for a required amendment is established, gives proper deference to the role of claims in defining an invention and providing public notice, and to the primacy of the PTO in ensuring that the claims allowed cover only subject matter that is properly patentable in a proffered patent application. Applied in this fashion, prosecution history estoppel places reasonable limits on the doctrine of equivalents, and further insulates the doctrine from any feared conflict with the Patent Act.

Because respondent has not proffered in this Court a reason for the addition of a lower pH limit, it is impossible to tell whether the reason for that addition could properly avoid an estoppel. Whether a reason in fact exists, but simply was not adequately developed, we cannot say. On remand, the Federal Circuit can consider whether reasons for that portion of the amendment were offered or not and whether further opportunity to establish such reasons would be proper.

B

Petitioner next argues that even if *Graver Tank* remains good law, the case held only that the absence of substantial differences was a *necessary* element for infringement under the doctrine of equivalents, not that it was *sufficient* for such a result. Relying on *Graver Tank's* references to the problem of an “unscrupulous copyist” and “piracy,” petitioner would require judicial exploration of the equities of a case before allowing application of the doctrine of equivalents. To be sure, *Graver Tank* refers to the prevention of copying and piracy when describing the benefits of the doctrine of equivalents. That the doctrine produces such benefits, however, does not mean that its application is limited only to cases where those

particular benefits are obtained.

Elsewhere in *Graver Tank* the doctrine is described in more neutral terms. And the history of the doctrine as relied upon by *Graver Tank* reflects a basis for the doctrine not so limited as petitioner would have it. In *Winans v. Denmead*, 15 How. 330, 343, 14 L.Ed. 717 (1854), we described the doctrine of equivalents as growing out of a legally implied term in each patent claim that “the claim extends to the thing patented, however its form or proportions may be varied.” Under that view, application of the doctrine of equivalents involves determining whether a particular accused product or process infringes upon the patent claim, where the claim takes the form-half express, half implied-of “X and its equivalents.”

If the essential predicate of the doctrine of equivalents is the notion of identity between a patented invention and its equivalent, there is no basis for treating an infringing equivalent any differently from a device that infringes the express terms of the patent. Application of the doctrine of equivalents, therefore, is akin to determining literal infringement, and neither requires proof of intent.

Although *Graver Tank* certainly leaves room for petitioner's suggested inclusion of intent-based elements in the doctrine of equivalents, we do not read it as requiring them. The better view, and the one consistent with *Graver Tank's* predecessors and the objective approach to infringement, is that intent plays no role in the application of the doctrine of equivalents.

C

Finally, petitioner proposes that in order to minimize conflict with the notice function of patent claims, the doctrine of equivalents should be limited to equivalents that are disclosed within the patent itself. A milder version of this argument, which found favor with the dissenters below, is that the doctrine should be limited to equivalents that were known at the time the patent was issued, and should not extend to after-arising equivalents.

As we have noted, with regard to the objective nature of the doctrine, a skilled practitioner's knowledge of the interchangeability between claimed and accused elements is not relevant for its own sake, but rather for what it tells the fact-finder about the

similarities or differences between those elements. Much as the perspective of the hypothetical “reasonable person” gives content to concepts such as “negligent” behavior, the perspective of a skilled practitioner provides content to, and limits on, the concept of “equivalence.” Insofar as the question under the doctrine of equivalents is whether an accused element is equivalent to a claimed element, the proper time for evaluating equivalency-and thus knowledge of interchangeability between elements-is at the time of infringement, not at the time the patent was issued. And rejecting the milder version of petitioner's argument necessarily rejects the more severe proposition that equivalents must not only be known, but must also be actually disclosed in the patent in order for such equivalents to infringe upon the patent.

IV

The various opinions below, respondents, and *amici* devote considerable attention to whether application of the doctrine of equivalents is a task for the judge or for the jury. However, despite petitioner's argument below that the doctrine should be applied by the judge, in this Court petitioner makes only passing reference to this issue.

Petitioner's comments go more to the alleged inconsistency between the doctrine of equivalents and the claiming requirement than to the role of the jury in applying the doctrine as properly understood. Because resolution of whether, or how much of, the application of the doctrine of equivalents can be resolved by the court is not necessary for us to answer the question presented, we decline to take it up. The Federal Circuit held that it was for the jury to decide whether the accused process was equivalent to the claimed process. There was ample support in our prior cases for that holding. Nothing in our recent decision in *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) necessitates a different result than that reached by the Federal Circuit. Indeed, *Markman* cites with considerable favor, when discussing the role of judge and jury, the seminal *Winans* decision. Whether, if the issue were squarely presented to us, we would reach a different conclusion than did the Federal Circuit is not a question we need decide today.

With regard to the concern over unreviewability due to black-box jury verdicts, we offer only guidance, not a specific mandate. Where the evidence is such that no

reasonable jury could determine two elements to be equivalent, district courts are obliged to grant partial or complete summary judgment. If there has been a reluctance to do so by some courts due to unfamiliarity with the subject matter, we are confident that the Federal Circuit can remedy the problem. Of course, the various legal limitations on the application of the doctrine of equivalents are to be determined by the court, either on a pretrial motion for partial summary judgment or on a motion for judgment as a matter of law at the close of the evidence and after the jury verdict. Thus, under the particular facts of a case, if prosecution history estoppel would apply or if a theory of equivalence would entirely vitiate a particular claim element, partial or complete judgment should be rendered by the court, as there would be no further *material* issue for the jury to resolve.

Finally, in cases that reach the jury, a special verdict and/or interrogatories on each claim element could be very useful in facilitating review, uniformity, and possibly postverdict judgments as a matter of law. We leave it to the Federal Circuit how best to implement procedural improvements to promote certainty, consistency, and reviewability to this area of the law.

V

All that remains is to address the debate regarding the linguistic framework under which “equivalence” is determined. Both the parties and the Federal Circuit spend considerable time arguing whether the so-called “triple identity” test—focusing on the *function* served by a particular claim element, the *way* that element serves that function, and the *result* thus obtained by that element—is a suitable method for determining equivalence, or whether an “insubstantial differences” approach is better. There seems to be substantial agreement that, while the triple identity test may be suitable for analyzing mechanical devices, it often provides a poor framework for analyzing other products or processes. On the other hand, the insubstantial differences test offers little additional guidance as to what might render any given difference “insubstantial.”

In our view, the particular linguistic framework used is less important than whether the test is probative of the essential inquiry: Does the accused product or process contain elements identical or equivalent to each claimed element of the patented invention? Different linguistic frameworks may be more suitable to

different cases, depending on their particular facts. A focus on individual elements and a special vigilance against allowing the concept of equivalence to eliminate completely any such elements should reduce considerably the imprecision of whatever language is used. An analysis of the role played by each element in the context of the specific patent claim will thus inform the inquiry as to whether a substitute element matches the function, way, and result of the claimed element, or whether the substitute element plays a role substantially different from the claimed element. With these limiting principles as a backdrop, we see no purpose in going further and micromanaging the Federal Circuit's particular word choice for analyzing equivalence. We expect that the Federal Circuit will refine the formulation of the test for equivalence in the orderly course of case-by-case determinations, and we leave such refinement to that court's sound judgment in this area of its special expertise.

VI

Today we adhere to the doctrine of equivalents. The determination of equivalence should be applied as an objective inquiry on an element-by-element basis. Prosecution history estoppel continues to be available as a defense to infringement, but if the patent holder demonstrates that an amendment required during prosecution had a purpose unrelated to patentability, a court must consider that purpose in order to decide whether an estoppel is precluded. Where the patent holder is unable to establish such a purpose, a court should presume that the purpose behind the required amendment is such that prosecution history estoppel would apply. Because the Court of Appeals for the Federal Circuit did not consider all of the requirements as described by us today, particularly as related to prosecution history estoppel and the preservation of some meaning for each element in a claim, we reverse its judgment and remand the case for further proceedings consistent with this opinion.

It is so ordered.

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