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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.

Patentee brought infringement action against competitor, alleging that competitor's ultrafiltration method for purifying dye infringed patented method under doctrine of equivalents. The United States District Court for the Southern District of Ohio, Herman J. Weber, J., entered judgment in favor of patentee, and competitor appealed. The Court of Appeals of the Federal Circuit affirmed, 62 F.3d 1512, and certiorari was granted. The Supreme Court, Justice Thomas, held that: (1) doctrine of equivalents is not inconsistent with Patent Act; (2) doctrine of equivalents must be applied to individual elements of patent claim, not to invention as a whole; (3) prosecution history estoppel does not apply whenever patent claim has been amended during application process, regardless of reasons for change; (4) patentee's addition of lower pH limit during application process did necessarily preclude application of doctrine of equivalents as to that element; (5) remand was required to determine whether reason for amending patent claim to add lower pH limit was sufficient to avoid prosecution history estoppel; (6) doctrine of equivalents does not require proof of intent; (7) doctrine of equivalents is not limited to equivalents disclosed within patent itself.
Reversed and remanded.
Justice Ginsburg filed concurring opinion in which Justice Kennedy joined.

West Headnotes

[1] Patents k237
291k237

Doctrine of equivalents is not inconsistent with statutory requirement that patentee specifically "claim" invention covered by patent. 35 U.S.C.A. ¤ 112.

[2] Patents k237
291k237

Doctrine of equivalents does not circumvent patent reissue process, designed to correct mistakes in drafting or the like, and does not avoid express limitations on that process. 35 U.S.C.A. ¤¤ 251, 252.

[3] Patents k237
291k237

Doctrine of equivalents is not inconsistent with primacy of Patent and Trademark Office (PTO) in setting scope of patent through patent prosecution process.

[4] Patents k237
291k237

Evolution of patent practice from "central claiming," describing core principles of invention, to "peripheral claiming," describing outer boundaries of invention, did not require abandonment of doctrine of equivalents; that claim describing limited improvement in quoted field would have limited range of permissible equivalents did not negate availability of doctrine.

[5] Patents k237
291k237

Statute allowing "means" claims, but requiring that application of broad language of such claims be limited to only those means that are "equivalent" to actual means shown in patent specification, did not implicitly negate doctrine of equivalents as applied where there is no literal infringement. 35 U.S.C.A. ¤ 112.

[6] Patents k237
291k237

Doctrine of equivalents, when applied broadly, conflicts with definitional and public-notice functions of statutory claiming requirement. 35 U.S.C.A. ¤ 112.

[7] Patents k237
291k237

Each element contained in patent claim is deemed material to defining scope of patented invention, and thus doctrine of equivalents must be applied to individual elements of claim, not to invention as a whole. 35 U.S.C.A. ¤ 112.

[8] Patents k237
291k237

It is important to ensure that application of doctrine of equivalents, even as to individual element is not allowed such broad play as to effectively eliminate that element in its entirety. 35 U.S.C.A. ¤ 112.

[9] Patents k168(2.2)
291k168(2.2)

Doctrine of prosecution history estoppel does not apply whenever subject matter is surrendered during prosecution of patent, regardless of reason for change.

[10] Patents k230
291k230

While lower pH level of 6.0, by its mere inclusion in claim for patent disclosing ultrafiltration process for dye purification, became material element of that claim, doctrine of equivalents was not necessarily precluded as to that element, where lower limit did not serve to distinguish prior art patent.

[11] Patents k168(2.1)
291k168(2.1)

[11] Patents k237
291k237

Where reason for change in patent claim during prosecution was not related to avoiding prior art, change may introduce new element, but does not necessarily preclude infringement by equivalents of that element.

[12] Patents k168(2.6)
291k168(2.6)

Where change is made to patent to overcome objection based on prior art, court is not free to review correctness of that objection when deciding whether to apply prosecution history estoppel; such concerns are properly addressed on direct appeal from denial of patent, and will not be revisited in infringement action.

[13] Patents k168(2.6)
291k168(2.6)

Where change is made to patent claim to overcome objection based on prior art, it is permissible for court to explore reason for objection and manner in which amendment addressed and avoided objection in determining whether prosecution history estoppel applies.

[14] Patents k312(1.1)
291k312(1.1)

Burden is on patent holder to establish reason for amendment required during patent prosecution; court then decides whether that reason is sufficient to overcome prosecution history estoppel as bar to application of doctrine of equivalents to element added by that amendment.

[15] Patents k168(2.6)
291k168(2.6)

Where patentee establishes no explanation for amendment required during patent prosecution, court should presume that Patent and Trademark Office (PTO) has substantial reason related to patentability for including limiting element added by amendment; in those circumstances, prosecution history estoppel bars application of doctrine of equivalents as to that element.

[16] Patents k324.60
291k324.60

Remand was required to determine reason for adding lower pH limit to patent claiming ultrafiltration process for purifying dye, so it could be determined whether prosecution history estoppel applied to claim of infringement under doctrine of equivalents.

[17] Patents k237
291k237

Application of doctrine of equivalents is akin to determining literal infringement, and neither requires proof of intent.

[18] Patents k237
291k237

With regard to objective nature of doctrine of equivalents, skilled practitioner's knowledge of interchangeability between claimed and accused elements is not relevant for its own sake, but rather for what it tells fact finder about similarities or differences between those elements.

[19] Patents k237
291k237

Insofar as question under doctrine of equivalents is whether accused element is equivalent to claimed element, proper time for evaluating equivalency, and thus knowledge of interchangeability between elements, is at time of infringement, not at time patent was issued.

[20] Patents k237
291k237

Equivalents need not be actually disclosed in patent in order for such equivalents to infringe upon patent.

[21] Patents k323.2(1)
291k323.2(1)

Where evidence in patent infringement action is such that no reasonable jury could determine two elements to be equivalent, district courts are obliged to grant partial or complete summary judgment. Fed.Rules Civ.Proc.Rule 56, 28 U.S.C.A.

[22] Patents k314(5)
291k314(5)

[22] Patents k323.2(1)
291k323.2(1)

Various legal limitations on application of doctrine of equivalents are to be determined by court, either in pretrial motion for partial summary judgment or on motion for judgment as matter of law at close of evidence and after jury verdict. Fed.Rules Civ.Proc.Rules 50, 56, 28 U.S.C.A.

[23] Patents k314(5)
291k314(5)

[23] Patents k323.1
291k323.1

Under particular facts of case, if prosecution history estoppel would apply or theory of equivalence would entirely vitiate particular claim element, partial or complete judgment should be rendered by court, as there would be no further material issue for jury to resolve. Fed.Rules Civ.Proc.Rule 56, 28 U.S.C.A.

[24] Patents k314(6)
291k314(6)

In patent infringement cases that reach jury, special verdict and/or interrogatories on each claim element could be useful in facilitating review, uniformity, and possibly postverdict judgments as matter of law. Fed.Rules Civ.Proc.Rules 49, 50, 28 U.S.C.A.

[25] Patents k237
291k237

Essential inquiry under doctrine of equivalents is whether accused product or process contains element identical or equivalent to each claimed element of patented invention.

[26] Patents k237
291k237

Analysis of role played by each element in context of specific patent claim will inform inquiry as to whether substitute element matches function, way, and result of claimed element, or whether substitute element plays role substantially different from claimed element for purposes of doctrine of equivalents.

Patents k328(2)
291k328(2)

4,560,746. Cited.
**1043 Syllabus [FN*]

FN* The syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader. See United States v. Detroit Timber & Lumber Co., 200 U.S. 321, 337, 26 S.Ct. 282, 287, 50 L.Ed. 499.

*17 Petitioner and respondent both manufacture dyes from which impurities must be removed. Respondent's " '746 patent," which issued in 1985, discloses an improved purification process involving the "ultrafiltration" of dye through a porous membrane at pH levels between 6.0 and 9.0. The inventors so limited their claim's pH element during patent prosecution after the patent examiner objected because of a perceived overlap with the earlier "Booth" patent, which disclosed an ultrafiltration process operating at a pH above 9. 0. In 1986, petitioner developed its own ultrafiltration process, which operated at a pH level of 5.0. Respondent sued for infringement of the '746 patent, relying solely on the "doctrine of equivalents," under which 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. Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 609, 70 S.Ct. 854, 856-857, 94 L.Ed. 1097. Over petitioner's objections that this is an equitable doctrine and is to be applied by the court, the equivalence issue was included among those sent to the jury, which found, inter alia, that petitioner infringed upon the '746 patent. The District Court, among its rulings, entered a permanent injunction against petitioner. The en banc Federal Circuit affirmed, holding that the doctrine of equivalents continues to exist, that the question of equivalence is for the jury to decide, and that the jury had substantial evidence from which to conclude that petitioner's process was not substantially different from the process disclosed in the '746 patent.

Held:

1. The Court adheres to the doctrine of equivalents. Pp. 1046-1049.

(a) In Graver Tank, supra, at 609, 70 S.Ct., at 856-857, the Court, inter alia, described some of the considerations that go into applying the doctrine, such as the patent's context, the prior art, and the particular circumstances of the case, including the purpose for which an ingredient is used in the patent, the qualities it has when combined with the other ingredients, the function it is intended to perform, and whether persons reasonably *18 skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was. Pp. 1046-1047.

(b) This Court rejects petitioner's primary argument, that the doctrine of equivalents, as set out in Graver Tank in 1950, is inconsistent with, and thus did not survive, particular aspects of Congress' 1952 revision of the Patent Act, 35 U.S.C. ¤ 100 et seq. Petitioner's first three arguments in this regard--that the doctrine (1) is inconsistent with ¤ 112's requirement that a patentee specifically "claim" the covered invention, (2) circumvents the patent reissue process under ¤¤ 251-252, and (3) is inconsistent with the primacy of the Patent and Trademark Office (PTO) in setting a patent's scope-- were made in Graver Tank, supra, at 613-615, and n. 3, 70 S.Ct., at 858-860, and n. 3, in the context of the 1870 Patent Act, and failed to command a majority. The 1952 Act is not materially different from the 1870 Act with regard to these matters. Also unpersuasive is petitioner's fourth argument, that the doctrine of equivalents was implicitly rejected as a general matter by Congress' specific and limited inclusion of it in ¤ 112, ¦ 6. This new provision was enacted as a targeted cure in response to Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1, 8, 67 S.Ct. 6, 9-10, 91 L.Ed. 3, and thereby to allow so-called "means" claims describing an element of an invention by the result accomplished or the function served. Moreover, the statutory reference to "equivalents" appears to be no more than a prophylactic against potential **1044 side effects of that cure, i.e., an attempt to limit the application of the broad literal language of "means" claims to those means that are "equivalent" to the actual means shown in the patent specification. Pp. 1047-1048

(c) The determination of equivalence should be applied as an objective inquiry on an element-by-element basis. The Court is concerned that the doctrine, as it has come to be broadly applied since Graver Tank, conflicts with the Court's numerous holdings that a patent may not be enlarged beyond the scope of its claims. The way to reconcile the two lines of authority is to apply the doctrine to each of the individual elements of a claim, rather than to the accused product or process as a whole. Doing so will preserve some meaning for each of a claim's elements, all of which are deemed material to defining the invention's scope. So long as the doctrine does not encroach beyond these limits, or beyond related limits discussed in the

Court's opinion, infra, at 1049-1051, 1053-1054, n. 8, and 1054, it will not vitiate the central functions of patent claims to define the invention and to notify the public of the patent's scope. Pp. 1048-1049.

(d) Petitioner is correct that Graver Tank did not supersede the well-established limitation on the doctrine of equivalents known as "prosecution history estoppel," whereby a surrender of subject matter during patent prosecution may preclude recapturing any part of that *19 subject matter, even if it is equivalent to the matter expressly claimed. But petitioner reaches too far in arguing that any such surrender establishes a bright line beyond which no equivalents may be claimed, and that the reason for an amendment during patent prosecution is therefore irrelevant to any subsequent estoppel. There are a variety of reasons why the PTO may request a change in claim language, and if the patent holder demonstrates that an amendment 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, the court should presume that the purpose behind the required amendment is such that prosecution history estoppel would apply. Here, it is undisputed that the upper limit of 9.0 pH was added to the '746 patent in order to distinguish the Booth patent, but the record before this Court does not reveal the reason for adding the lower 6.0 pH limit. It is therefore impossible to tell whether the latter reason could properly avoid an estoppel. Pp. 1049-1051.

(e) The Court rejects petitioner's argument that Graver Tank requires judicial exploration of the intent of the alleged infringer or a case's other equities before allowing application of the doctrine of equivalents. Although Graver Tank certainly leaves room for the inclusion of intent-based elements in the doctrine, the Court does not read the case as requiring proof of intent. The better view, and the one consistent with Graver Tank's predecessors, see, e.g., Winans v. Denmead, 15 How. 330, 343, 14 L.Ed. 717, and the objective approach to infringement, is that intent plays no role in the doctrine's application. Pp. 1051-1052.

(f) The Court also rejects petitioner's proposal 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. Insofar as the question under the doctrine is whether an accused element is equivalent to a claimed element, the proper time for evaluating equivalency--and knowledge of interchangeability between elements--is at the time of infringement, not at the time the patent was issued. Pp. 1052-1053.

(g) The Court declines to consider whether application of the doctrine of equivalents is a task for the judge or for the jury, since resolution of that question is not necessary to answer the question here presented. P. 1053.

(h) In the Court's view, the particular linguistic framework used to determine "equivalence," whether the so-called "triple identity" test or the "insubstantial differences" test, 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 *20 may be more suitable to different cases, depending on their particular facts. The Court leaves it **1045 to the Federal Circuit's sound judgment in this area of its special expertise to refine the formulation of the test for equivalence in the orderly course of case-by-case determinations. P. 1054.

2. Because the Federal Circuit did not consider all of the requirements of the doctrine of equivalents as described by the Court in this case, particularly as related to prosecution history estoppel and the preservation of some meaning for each element in a claim, further proceedings are necessary. P. 1054.

62 F.3d 1512, reversed and remanded.
THOMAS, J., delivered the opinion for a unanimous Court. GINSBURG, J., filed a concurring opinion, in which KENNEDY, J., joined, post, p. 1054.
Richard G. Taranto, Washington, DC, for petitioner.
Lawrence G. Wallace, Washington, DC, amicus curiae for U.S.
David E. Schmit, Cincinnati, OH, for respondent.
For U.S. Supreme Court Briefs See:
1996 WL 172235 (Pet.Brief)
1996 WL 249502 (Resp.Brief)
1996 WL 325332 (Reply.Brief)
1996 WL 170149 (Amicus.Brief)
1996 WL 170151 (Amicus.Brief)
1996 WL 170154 (Amicus.Brief)
1996 WL 170157 (Amicus.Brief)
1996 WL 172213 (Amicus.Brief)
1996 WL 172216 (Amicus.Brief)
1996 WL 172219 (Amicus.Brief)
1996 WL 172221 (Amicus.Brief)
1996 WL 179986 (Amicus.Brief)
1996 WL 183007 (Amicus.Brief)
1996 WL 249505 (Amicus.Brief)
1996 WL 249507 (Amicus.Brief)
1996 WL 249509 (Amicus.Brief)
1996 WL 249511 (Amicus.Brief)
1996 WL 253319 (Amicus.Brief)
1996 WL 254689 (Amicus.Brief)
1996 WL 294093 (Amicus.Brief)
For Transcript of Oral Argument See:
1996 WL 593639 (U.S.Oral.Arg.)

*21 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. Id., at 609, 70 S.Ct., at 856-857. 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 *22 pressures and pH levels, [FN1] resulting in a high purity dye product.

FN1. The pH, or power (exponent) of Hydrogen, of a solution is a measure of its acidity or alkalinity. A pH of 7.0 is neutral; a pH below 7.0 is acidic; and a pH above 7.0 is alkaline. Although measurement of pH is on a logarithmic scale, with each whole number difference representing a ten-fold difference in acidity, the practical significance of any such difference will often depend on the context. Pure water, for example, has a neutral pH of 7.0, whereas carbonated water has an acidic pH of 3.0, and concentrated hydrochloric acid has a pH approaching 0.0. On the other end of the scale, milk of magnesia has a pH of 10.0, whereas household ammonia has a pH of 11.9. 21 Encyclopedia Americana 844 (Int'l ed.1990).

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 **1046 "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. [FN2]

FN2. 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. Brief for Petitioner 4, n. 5, 37, n. 28. 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. Brief for Respondent 34, n. 34.

*23 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 under 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. 62 F.3d 1512 (1995).
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. Id., at 1521-1522. 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. Id., at 1525.

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 *24 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. Id., at 1537-1538 (opinion of Plager, J.) 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." Id., at 1574. As she explained it: "The 'scope' is not enlarged if courts do not go beyond the substitution of equivalent elements." Ibid. 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. Id., at 1540- 1542 (opinion of Plager, J.); id., at 1579 (opinion of Nies, J.).

We granted certiorari, 516 U.S. 1145, 116 S.Ct. 1014, 134 L.Ed.2d 95 (1996), 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. 339 U.S., at 610, 70 S.Ct., at 857. 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, **1047 whether under the circumstances the change was so insubstantial that the trial court's invocation of the doctrine of equivalents was justified." Ibid. 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 *25 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." Id., at 609, 70 S.Ct., at 856-857.

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. Id., at 612, 70 S.Ct., at 858.

A

[1][2][3] 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, 35 U.S.C. ¤ 100 et seq., 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 inclusion of the doctrine *26 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. [FN3]

FN3. Graver Tank was decided over a vigorous dissent. In that dissent, Justice Black raised the first three of petitioner's four arguments against the doctrine of equivalents. See 339 U.S., at 613- 614, 70 S.Ct., at 858-859 (doctrine inconsistent with statutory requirement to "distinctly claim" the invention); id., at 614-615, 70 S.Ct., at 859-860 (patent reissue process available to correct mistakes); id., at 615, n. 3, 70 S.Ct., at 859, n. 3 (duty lies with the Patent Office to examine claims and to conform them to the scope of the invention; inventors may appeal Patent Office determinations if they disagree with result). Indeed, petitioner's first argument was not new even in 1950. Nearly 100 years before Graver Tank, this Court approved of the doctrine of equivalents in Winans v. Denmead, 15 How. 330, 14 L.Ed. 717 (1854). The dissent in Winans unsuccessfully argued that the majority result was inconsistent with the requirement in the 1836 Patent Act that the applicant "particularly 'specify and point' out what he claims as his invention," and that the patent protected nothing more. Id., 15 How. at 347 (opinion of Campbell, J.).

[4] The 1952 Patent Act is not materially different from the 1870 Act with regard to claiming, reissue, and the role of the PTO. Compare, e.g., 35 U.S.C. ¤ 112 ("The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention") with the Consolidated Patent Act of 1870, ch. 230, ¤ 26, 16 Stat. 198, 201 (the applicant "shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery"). Such minor differences as exist between those provisions in the 1870 and the 1952 Acts have no bearing on the result reached in Graver Tank, **1048 and thus provide no basis for our overruling it. In the context of infringement, we have already held that pre-1952 precedent survived the passage of the 1952 Act. See Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 342, 81 S.Ct. 599, 602-603, 5 L.Ed.2d 592 (1961) (new section defining infringement "left intact the entire *27 body of case law on direct infringement"). We see no reason to reach a different result here. [FN4]

FN4. Petitioner argues that the evolution in patent practice from "central" claiming (describing the core principles of the invention) to "peripheral" claiming (describing the outer boundaries of the invention) requires that we treat Graver Tank as an aberration and abandon the doctrine of equivalents. Brief for Petitioner 43-45. We disagree. The suggested change in claiming practice predates Graver Tank, is not of statutory origin, and seems merely to reflect narrower inventions in more crowded arts. Also, judicial recognition of so-called "pioneer" patents suggests that the abandonment of

"central" claiming may be overstated. That a claim describing a limited improvement in a crowded field will have a limited range of permissible equivalents does not negate the availability of the doctrine vel non.

[5] Petitioner's fourth argument for an implied congressional negation of the doctrine of equivalents turns on the reference to "equivalents" in the "means" claiming provision of the 1952 Act. Section 112, ¦ 6, a provision not contained in the 1870 Act, states:

"An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." (Emphasis added.)

Thus, under this new provision, an applicant can describe an element of his invention by the result accomplished or the function served, rather than describing the item or element to be used (e.g., "a means of connecting Part A to Part B," rather than "a two-penny nail"). Congress enacted ¤ 112, ¦ 6, in response to Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1, 67 S.Ct. 6, 91 L.Ed. 3 (1946), which rejected claims that "do not describe the invention but use 'conveniently functional language at the exact point of novelty.' " Id., at 8, 67 S.Ct., at 9-10, (citation *28 omitted). See In re Donaldson Co., 16 F.3d 1189, 1194 (C.A.Fed.1994) (Congress enacted predecessor of ¤ 112, ¦ 6, in response to Halliburton); In re Fuetterer, 50 C.C.P.A. 1453, 319 F.2d 259, 264, n. 11 (1963) (same); see also 2 D. Chisum, Patents ¤ 8.04[2], pp. 63-64 (1996) (discussing 1954 commentary of then-Chief Patent Examiner P.J. Federico). Section 112, ¦ 6, now expressly allows so-called "means" claims, with the proviso that application of the broad literal language of such claims must be limited to only those means that are "equivalen[t]" to the actual means shown in the patent specification. This is an application of the doctrine of equivalents in a restrictive role, narrowing the application of broad literal claim elements. We recognized this type of role for the doctrine of equivalents in Graver Tank itself. 339 U.S., at 608-609, 70 S.Ct., at 856-857. The added provision, however, is silent on the doctrine of equivalents as applied where there is no literal infringement.

Because ¤ 112, ¦ 6, was enacted as a targeted cure to a specific problem, and because the reference in that provision to "equivalents" appears to be no more than a prophylactic against potential side effects of that cure, such limited congressional action should not be overread for negative implications. Congress in 1952 could easily have responded to Graver Tank as it did to the Halliburton decision. But it did not. Absent something more compelling than the dubious negative inference offered by petitioner, the lengthy history of the doctrine of equivalents strongly supports adherence to our refusal in Graver Tank to find that the Patent Act conflicts with that doctrine. Congress can legislate the doctrine of equivalents out of existence any time it chooses. The various policy arguments now made by both sides are thus best addressed to Congress, not this Court.

B

[6] 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 **1049 own, unbounded *29 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." 62 F.3d, at 1573-1574 (dissenting opinion) (emphasis in original).

[7][8] 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 *30 limits to be discussed infra, this page and 1050-1051, 1053, n. 8, and 1054, 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

[9] 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." See Bayer Aktiengesellschaft v. Duphar Int'l Research B.V., 738 F.2d 1237, 1238 (C.A.Fed.1984). 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 *31 rendered the claimed subject matter unpatentable. Thus, in Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126, 62 S.Ct. 513,

86 L.Ed. 736 (1942) Chief Justice Stone distinguished inclusion of a limiting phrase in an original patent claim from the "very different" situation in which **1050 "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" previously used. Id., at 136, 62 S.Ct., at 518 (emphasis added). Similarly, in Keystone Driller Co. v. Northwest Engineering Corp., 294 U.S. 42, 55 S.Ct. 262, 79 L.Ed. 747 (1935), estoppel was applied where the initial claims were "rejected on the prior art," id., at 48, n. 6, 55 S.Ct., at 265, n. 6, and where the allegedly infringing equivalent element was outside of the revised claims and within the prior art that formed the basis for the rejection of the earlier claims, id., at 48, 55 S.Ct., at 264-265. [FN5]

FN5. See also Smith v. Magic City Kennel Club, Inc., 282 U.S. 784, 788, 51 S.Ct. 291, 293, 75 L.Ed. 707 (1931) (estoppel applied to amended claim where the original "claim was rejected on the prior patent to" another); Computing Scale Co. of America v. Automatic Scale Co., 204 U.S. 609, 618-620, 27 S.Ct. 307, 311-312, 51 L.Ed. 645 (1907) (initial claims rejected based on lack of invention over prior patents); Hubbell v. United States, 179 U.S. 77, 83, 21 S.Ct. 24, 26-27, 45 L.Ed. 95 (1900) (patentee estopped from excluding a claim element where element was added to overcome objections based on lack of novelty over prior patents); Sutter v. Robinson, 119 U.S. 530, 541, 7 S.Ct. 376, 381-382, 30 L.Ed. 492 (1886) (estoppel applied where, during patent prosecution, the applicant "was expressly required to state that [the device's] structural plan was old and not of his invention"); cf. Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 33, 86 S.Ct. 684, 701-702, 15 L.Ed.2d 545 (1966) (noting, in a validity determination, that "claims that have been narrowed in order to obtain the issuance of a patent by distinguishing the prior art cannot be sustained to cover that which was previously by limitation eliminated from the patent").

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. Brief for United States as Amicus Curiae 22-23 *32 counsel for the PTO also appearing on the brief). 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. [FN6]

FN6. That petitioner's rule might provide a brighter line for determining whether a patentee is estopped under certain circumstances is not a sufficient reason for adopting such a rule. This is especially true where, as here, the PTO may have relied upon a flexible rule of estoppel when deciding whether to ask for a change in the first place. To change so substantially the rules of the game now could very well subvert the various balances the PTO sought to strike when issuing the numerous patents which have not yet expired and which would be affected by our decision.

[10][11][12][13] 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. See Hubbell v. United States, 179 U.S. 77, 82, 21 S.Ct. 24, 26, 45 L.Ed. 95 (1900) (" '[A]ll [specified elements] must be regarded as material,' " though it remains an open " 'question whether an omitted part is supplied by an equivalent device or instrumentality' " (citation omitted)). *33 Where the reason for the change was not related to avoiding the prior art, the change may introduce a new element, **1051 but it does not necessarily preclude infringement by equivalents of that element. [FN7]

FN7. We do not suggest that, where a change is made to overcome an objection based on the prior art, a court is free to review the correctness of that objection when deciding whether to apply prosecution history estoppel. As petitioner rightly notes, such concerns are properly addressed on direct appeal from the denial of a patent, and will not be revisited in an infringement action. Smith v. Magic City Kennel Club, Inc., supra, 282 U.S. at 789-790, 51 S.Ct., at 293-294. What is permissible for a court to explore is the reason (right or wrong) for the objection and the manner in which the amendment addressed and avoided the objection.

[14][15] 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 *34 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.

[16] 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. Brief for Petitioner 32. Relying on Graver Tank's references to the problem of an "unscrupulous copyist" and "piracy," 339 U.S., at 607, 70 S.Ct., at 855-856, 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 *35 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 **1052 claim takes the form--half express, half implied--of "X and its equivalents."

[17] Union Paper-Bag Machine Co. v. Murphy, 97 U.S. 120, 125, 24 L.Ed. 935 (1878), on which Graver Tank also relied, offers a similarly intent- neutral view of the doctrine of equivalents:

"[T]he substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself; so that if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape."

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.

Petitioner also points to Graver Tank's seeming reliance on the absence of independent experimentation by the alleged infringer as supporting an equitable defense to the doctrine of equivalents. The Federal Circuit explained this factor by suggesting that an alleged infringer's behavior, be it copying, designing around a patent, or independent experimentation, indirectly reflects the substantiality of the differences between the patented invention and the accused device or process. According to the Federal Circuit, a person aiming to copy or aiming to avoid a patent is imagined to be at *36 least marginally skilled at copying or avoidance, and thus intentional copying raises an inference--rebuttable by proof of independent development--of having only insubstantial differences, and intentionally designing around a patent claim raises an inference of substantial differences. This explanation leaves much to be desired. At a minimum, one wonders how ever to distinguish between the intentional copyist making minor changes to lower the risk of legal action and the incremental innovator designing around the claims, yet seeking to capture as much as is permissible of the patented advance.

But another explanation is available that does not require a divergence from generally objective principles of patent infringement. In both instances in Graver Tank where we referred to independent research or experiments, we were discussing the known interchangeability between the chemical compound claimed in the patent and the compound substituted by the alleged infringer. The need for independent experimentation thus could reflect knowledge--or lack thereof--of interchangeability possessed by one presumably skilled in the art. The known interchangeability of substitutes for an element of a patent is one of the express objective factors noted by Graver Tank as bearing upon whether the accused device is substantially the same as the patented invention. Independent experimentation by the alleged infringer would not always reflect upon the objective question whether a person skilled in the art would have known of the interchangeability between two elements, but in many cases it would likely be probative of such knowledge.

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. *37 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.

[18][19][20] As we have noted, supra, at 1052, with regard to the objective nature of the **1053 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. See Brief for *38 Petitioner 22, n. 15 ("If this Court were to hold in Markman v. Westview Instruments, Inc., No. 95-26, 1996 WL 12585 (argued Jan. 8, 1996), that judges rather than juries are to construe patent claims, so as to provide a uniform definition of the scope of the legally protected monopoly, it would seem at cross-purposes to say that juries may nonetheless expand the claims by resort to a broad notion of 'equivalents' "); Reply Brief for Petitioner 20 (whether

judge or jury should apply the doctrine of equivalents depends on how the Court views the nature of the inquiry under the doctrine of equivalents).

[21][22][23][24] 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. See, e.g., Union Paper-Bag Machine Co. v. Murphy, 97 U.S., at 125 ("[I]n determining the question of infringement, the court or jury, as the case may be, ... are to look at the machines or their several devices or elements in the light of what they do, or what office or function they perform, and how they perform it, and to find that one thing is substantially the same as another, if it performs substantially the same function in substantially the same way to obtain the same result"); Winans v. Denmead, 15 How., at 344 ("[It] is a question for the jury" whether the accused device was "the same in kind, and effected by the employment of [the patentee's] mode of operation in substance"). 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 *39 and jury, the seminal Winans decision. 517 U.S., at 384-385, 116 S.Ct., at 1393. 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. [FN8]

FN8. 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. See Fed. Rule Civ. Proc. 56; Celotex Corp. v. Catrett, 477 U.S. 317, 322-323, 106 S.Ct. 2548, 2552-2553, 91 L.Ed.2d 265 (1986). 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. Fed. Rule Civ. Proc. 56; Fed. Rule Civ. Proc. 50. 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. See Fed. Rules Civ. Proc. 49 and 50. 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.

**1054 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 *40 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."

[25][26] 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 *41 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.

Justice GINSBURG, with whom Justice KENNEDY joins, concurring.

I join the opinion of the Court and write separately to add a cautionary note on the rebuttable presumption the Court announces **1055 regarding prosecution history estoppel. I address in particular the application of the presumption in this case and others in which patent prosecution has already been completed. The new presumption, if applied woodenly, might in some instances unfairly discount the expectations of a patentee who had no notice at the time of patent prosecution that such a presumption would apply. Such a patentee would have had little incentive to insist that the reasons for all modifications be memorialized in the file wrapper as they were made. Years after the fact, the patentee may find it difficult to establish an

evidentiary basis that would overcome the new presumption. The Court's opinion is sensitive to this problem, noting that "the PTO may have relied upon a flexible rule of estoppel when deciding whether to ask for a change" during patent prosecution. Ante, at 1050, n. 6.

Because respondent has not presented to this Court any explanation for the addition of the lower pH limit, I concur in the decision to remand the matter to the Federal Circuit. *42 On remand, that court can determine-- bearing in mind the prior absence of clear rules of the game--whether suitable reasons for including the lower pH limit were earlier offered or, if not, whether they can now be established.

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