17 Interpretation of Functional Claims in the United States

Researcher: Takashi Ohno(*)

The way in which a patent claim should be interpreted for determining the scope of protection of a patent right is an important subject. Functional claims, which are patent claims described using functional expressions, are convenient and are frequently used for inventions that are characterized by their functions or inventions in technical fields where there are no established terms to express the means for performing the functions. On the other hand, it has been indicated that functional claims make the scope of protection ambiguous and excessively broad since they literally cover all means for performing the function. In the United States, 35 USC §112, ¶6 stipulates that a claim can be described by a combination of functions, but that the scope of protection of such a claim should be narrowly interpreted. Thus, the question of how functional claims should be interpreted has been examined in many court decisions.

In this report, recent court decisions involving interpretation of functional claims, in particular, their scope of protection, were analyzed based on the historical background of interpretation of functional claims in the United States, and a brief comparative study was conducted with the situation of protection in Japan.

Ⅰ Introduction

Patent protection for an invention can only be sought by stating the concrete content of the invention in a specification and describing the content to be protected in the form of claims. Although inventors try to draft broad claims to seek a broad scope of protection, protection exceeding the actual scope of the invention would discourage third persons from developing new technology, and would not benefit the whole society. On the other hand, if the methods for expressing claims were too limited and the inventor could only enjoy a narrow scope of protection, it would not be possible to restrict imitations by trivial alterations. The issue of the treatment of functional claims is essentially a question of how to achieve balance between the freedom in describing claims and the desirable protection.

A functional claim is a patent claim of which at least one part is described by a means for performing a function. For example, by describing "a means for tightening" of a constituent element "screw," one would not only be able to express the "screw" itself in the claim language, but the whole means of tightening.

Since such a patent claim can directly express the function to be performed by a constituent element in the claim, it is useful for claim drafters to draft a broad claim covering the generic concept for inventions characterized by functions, and for patents in technical fields where words for expressing the means for performing certain functions have yet to be established. At the same time, however, it has the problem of making the scope of protection too ambiguous and broad in light of the disclosed invention, because, literally, it covers all means for performing the function.

35 USC §112, ¶6(*1) allows inventors to describe an element in a claim for a combination as a means for performing a specified function without describing the structure, material, or action involved, i.e. as a functional claim, and the scope of protection of such a functional claim is limited to the embodiments described in the specification and "equivalents" thereof (hereafter "statutory equivalents").

However, the statutory law is insufficient for clearly determining what kinds of descriptions should be judged as a functional claim and subject to this provision, and how the scope of protection would differ based on the statutory equivalents, compared to those based on the doctrine of equivalents. Thus, court decisions related to interpretation of functional claims are drawing much attention. While more and more theories have come to limit application of the doctrine of equivalents, as typified by prosecution history estoppel, there is a view that the filing of patent applications using the functional claims will increase in the future with the aim of at least enjoying protection of statutory equivalents.

In this report, the trend of interpretation of functional claims in the United States, particularly the application of the doctrine of equivalents to functional claims, was analyzed based on these viewpoints.

(*) Assistant Manager, IP Dept., Kawasaki Heavy Industries, Ltd.

(*1) 35 U.S.C. §112, ¶6.

Ⅱ Basic Interpretation of Functional Claims

1 Background of Establishment of 35 USC §112, ¶6

The treatment of functional claims in the United States has long been subject to debate with respect to the balance between disclosure and protection.

The types of claims that were addressed by the U.S. Supreme Court in its initial period, were those solely composed of a means for performing a single function. The Supreme Court judged such a claim to be invalid, stating that the patentee was claiming beyond his actual invention. Furthermore, in the Halliburton case(*2) in 1946, the Supreme Court, regarding the novelty of a claim consisting of a combined means for performing functions, declared that such a claim was invalid due to being too broad, ambiguous, and contained an underlying threat of going beyond its scope of invention.

However, practitioners strongly opposed the practice of immediately invalidating functional claims, which had been prevailing in the actual patent affairs, and in 1952, the U.S. Congress added §112, ¶6 in response to the Halliburton case decision in order to ensure convenience in practice, by allowing claims consisting of combined means for performing functions. At the same time, it stipulated that the scope of protection should be limited to the embodiments and equivalents thereof, so as to legislatively remove the grounds for invalidation of being too broad, ambiguous, and containing an underlying threat of going beyond its scope of invention.

2 Application of §112, ¶6 in Infringement Lawsuits

(1) Confusion over interpretation of §112, ¶6

Although the principles of interpretation of an ordinary claim are basically applied to interpretation of a functional claim, its scope of protection is already stipulated by statutory law, and this scope covers the embodiments and "equivalents thereof" (statutory equivalents). Therefore, this provision has confused the determination in practice as to whether the scope of protection defined in §112, ¶6 covered the embodiments described in the specification and their statutory equivalents, as well as their equivalents based on the doctrine of equivalents (i.e., equivalents of statutory equivalents), or whether it was almost limited to the embodiments described in the specification.

Since the 1952 amendment of the Patent Act, courts had not indicated an interpretation beyond "the embodiments described in the specification and equivalents thereof" and adopted a literal, relatively broad interpretation regarding this issue. However, the United States Court of Appeal for the Federal Circuit (hereafter "the CAFC"), which was established in 1982 for the purpose of making determination of law in appellate instances of patent infringement lawsuits consistent, seriously addressed this issue.

In the DMI case decision(*3) in 1985, the CAFC denied limited interpretation, stating that to interpret "means plus function" limitations as limited to a particular means defined in the specification would be to nullify the provision requiring that the limitation shall be construed to cover the structure described in the specification and equivalents thereof. Based on this, the CAFC declared that, although §112, ¶6 required some disclosure of the enabling means for accomplishing the function as embodiments in the specification, there was no requirement for every possible means to be disclosed, so the scope of protection was not limited to the disclosed embodiments alone, and emphasized the expansion of the scope of protection from mere embodiments to also cover statutory equivalents.

The Texas Instruments court decision(*4) in 1986 interpreted functional claims by an extremely peculiar argument; it is perhaps the decision which best illustrates the CAFC's anguish. The patent in question related to a miniature electronic calculator, wherein each constituent element in the claims was functionally described. In determining infringement, the CAFC first judged that the claimed functions were all performed in the respective elements of the accused product, and that the accused product was a statutory equivalent to the corresponding structure described in the specification. Despite literary infringement being generally found based on this judgment, the CAFC went further to compare the entirety of the invention to the entirety of the accused product, and denied both literary infringement and infringement based on the doctrine of equivalents, on the basis that the constituent elements of the accused product were a later-developed technology, which realized a far smaller miniature electronic calculator than the disclosed embodiments of the originally patented invention. Although this decision has been criticized by some people for not clarifying the relationship between §112, ¶6 and the reverse doctrine of equivalents, it certainly was a case that affected the later development of interpretation

(*2) 329 U.S. 1 (1946).
(*3) 755 F.2d 1570, 225 U.S.P.Q. 236 (Fed. Cir. 1985).
(*4) 805 F.2d 1558, 231 U.S.P.Q. 833 (Fed. Cir. 1986).

methods.

In the Valmont case decision(*5) the CAFC stated that §112, ¶6, while allowing claim description by a combination of functional elements in its first part, set a limitation to that scope of protection in the latter part, which was a limitation to the corresponding structure, material, or acts described in the specification and equivalents thereof, wherefore it operated more like the reverse doctrine of equivalents, rather than the doctrine of equivalents because it restricted the coverage of literal claim language.

(2) Basic principles for interpretation of functional claims

The basic principles for interpretation of functional claims, which were established as a result of confusion, can be summarized as follows.

(i) Identification of the structure corresponding to the function

The interpretation is made in two stages. The first stage is to identify the claimed function. Interpretation of the claimed function is based on the principles for interpretation of ordinary claims, and it is inappropriate to interpret the scope of claim narrower or broader than the literal claim language.

After distinguishing the function, determination is made as to composition of the structure disclosed in the specification corresponding to the claimed function. For sufficient correspondence, the structure needs to perform the claimed function, and the specification must clearly associate the structure and the enabling of the function. This criterion must be determined from the viewpoint of a person skilled in the art in that technical field. A patent claim is effective not only when two embodiments are disclosing separate corresponding structures, but also when a single embodiment is disclosing the corresponding structure.

On the other hand, if it becomes clear that none of the embodiments disclose the structure corresponding to the claimed function, the claim will be invalid for failing to satisfy the definiteness requirement in §112, ¶2(*6). However, there is slight confusion in recent court decisions(*7) as to the extent to which the corresponding structure must be described and whether everything including the common knowledge of a person skilled in the art must be described. While there is a possibility of being able to enjoy a remedy to the effect that a person skilled in the art can understand the corresponding structure even if it were not described, there is also an opinion that such remedy should not be extended based on the purport of §112, ¶6. Therefore, when one seeks to receive application of §112, ¶ 6, he/she needs to sufficiently describe the corresponding structure for performing the function described in the claim. In addition, since the scope of the corresponding structure for performing the function becomes subject to dispute(*8), it is also necessary to sufficiently describe the corresponding relationship in the specification so as to prevent it from being construed with unnecessary limitation.

(ii) Scope of protection of functional claims

(A) Literal infringement

After identifying the function and the corresponding structure, examination is made as to literal infringement. Examination on literal infringement of a functional claim includes two determination items. The first is determination of whether or not the accused product performs the same function as the claimed function. The second is determination of whether or not the accused product has the same structure as or a statutory equivalent to the structure corresponding to the functional elements described in the specification. The "statutory equivalent" here means the equivalent within the coverage of literal claim language, as is explained as the reverse doctrine of equivalents in the Valmont case decision, and is different from the doctrine of equivalents, which attempts to cover minute differences that do not correspond to claim language.

By reading the language of a functional claim as is, everything would be covered as long as it performs the same function. Nevertheless, the en banc decision in the Pennwalt case(*9) in 1987 stated, while citing an explanation by Judge Rich who was one of the drafters of §112, ¶ 6, that the literal scope of a functional claim would be construed as the structure corresponding to the function described in the specification and equivalents thereof. Based on this, the CAFC judged that literal infringement of a functional claim must be determined by comparing the accused product and the structure described in the specification to judge not only the identity of the function performed by the structure, but also whether the structure was equivalent.

Thus, literal infringement of a functional claim is determined by comparing the accused product and the structure corresponding to the function described in the specification, based on the premise of identity of the function, and by judging whether or not the two are identical or equivalent.

As the determination standards for "statutory equivalents," the "tripartite test" and the "interchangeability test" may be used. Although the two tests have different purposes and origins, they

(*5) 983 F.2d 1039, 25 U.S.P.Q. 2d 1451 (Fed. Cir. 1993).
(*6) 35 U.S.C. §112, ¶2.
(*7) S3 Inc. v. Nvidia Co., 259 F.3d 1364, 59 U.S.P.Q.2d 1745 (Fed. Cir. 2001).
(*8) Odetics, Inc. v. Storage Tech. Corp., 185 F.3d 1259, 51 U.S.P.Q.2d 1225 (Fed. Cir. 1999).
(*9) 833 F.2d 931, 4 U.S.P.Q.2d 1737 (Fed. Cir. 1987) (en banc).

are closely related in that they both make the determination based on the insubstantial difference.

Nevertheless, since the accused product is not compared with the claim itself, but the structure corresponding to the function described in the specification, there is confusion as to how strict the comparison should be.

Such state of confusion was most clearly illustrated by the IMS case decision and the Kemco case decision rendered in 2000.

In the IMS case(*10), the plaintiff, IMS, owned a patent relating to a control system for numerically-controlled machine tools that enabled interactive programming of the processes, and the claim included an "interface means" for transferring data from an external storage medium into a memory. In the embodiment disclosed in the specification, a cassette tape device was disclosed as the structure corresponding to the "interface means," while the product of the defendant, Haas, was a floppy disk drive. The district court decision denied literal infringement on the basis that the two were not equivalent structures, among other reasons. In the appellate instance, Judge Plager explained that a "statutory equivalent" only required the two to have equivalent structures, and did not require them to be structural equivalents. He stated that the determination of equivalents should be made from the context of the claimed invention. The CAFC remanded this case to the district court for further proceedings on the following bases: "interface means" was merely a way of storing created data; its physical characteristics were not important to the invention; and the plaintiff had supplied evidence on the interchangeability of the two apparatuses.

This decision explored a new aspect in determination of "statutory equivalents," in that the scope of equivalents could be flexibly determined according to the importance of the element.

The Kemco case decision(*11), in contrast, clearly indicated the need for component-by-component structural comparison. The plaintiff, Kemco, owned a patent relating to an envelope, which prevented it from being illicitly opened. With conventional envelope technology, the adhesive can be melted by heat, so their enclosed contents could be removed without leaving a trace of being opened. This patent was characterized by having two kinds of sealing means in order to solve this problem: the first being an ordinary sealing means merely intended for closing the envelope, and the second being a sealing means that easily reacted to and was damaged by heat. In addition, the claims included a functional element, "closing means." The defendant's product also had two kinds of sealing means for preventing it from being illicitly opened. However, these two differed in that, while the two kinds of sealing means were attached to a fold-over flap in the embodiment of the plaintiff's invention, the defendant's product was comprised of a dual-lip structure that covered the inside of the envelope opening as well as the whole outside of the envelope opening. In analyzing literal infringement, Judge Lourie compared the structural features of the defendant's product and the embodiment, and finding that, although the two coincided in having the same function of closing the envelope, the difference in their structure resulted in a difference between the structures for attaching the adhesive, he declared the way and the result for performing the function to be substantially different, and denied literal infringement. He also stated that the doctrine of equivalents was inapplicable because it was already clear that the way and the result were different, and supported the district court decision of non-infringement.

In this decision, no examination was made as to the importance of the functional elements, which was indicated in the IMS decision, but only structural comparison was conducted. If the standard in the IMS decision was applied to this case, the important part of the invention would be to use two kinds of sealing means, and not the structure itself for closing the envelope, so a reverse conclusion could have been derived.

In this manner, courts have been making effort to clarify the determination standards by indicating that the tests for the doctrine of equivalents can be used to determine "statutory equivalents," but court decisions still remain unstable.

(B) Doctrine of equivalents

Even if literal infringement could not be found, infringement under the doctrine of equivalents could be established if the difference between the claimed invention and the accused product or process were insubstantial. Functional claims already encompass the "statutory equivalents" under statutory law. Therefore, applicability of the doctrine of equivalents to functional claims has been questioned in terms of overprotection and indefiniteness of the scope, and many people had been negative about such application.

Nevertheless, CAFC decisions in recent years have clarified the difference between the two, and have judged that functional claims could also be protected by the doctrine of equivalents. Application of the doctrine of equivalents to functional claims will be discussed in detail in Chapter III.

(iii) Scope of protection of functional claims and prosecution history

Prosecution history is taken into account to

(*10) 206 F.3d 1422, 54 U.S.P.Q.2d 1129 (Fed. Cir. 2000).
(*11) 208 F.3d 1352, 54 U.S.P.Q.2d 1308 (Fed. Cir. 2000).

interpret the literal scope, that is, to determine the extent of "statutory equivalents" in interpretation of a functional claim, while it also sometimes functions to limit application of the doctrine of equivalents. In addition, since a functional claim covers "statutory equivalents" under its literal scope, when a functional claim is amended into an ordinary claim, a mere amendment to replace the means-plus-function limitation with the structure corresponding to the functional element will be judged as a narrowing amendment.

(iv) Who should determine the scope of a functional claim

While the literal scope of a functional claim includes the corresponding embodiments and the equivalents thereof, there is a controversy over whether determination on these "statutory equivalents" should be considered as a question of law, since it is only a question of literal interpretation of the claim, or it should be considered as a question of fact that should be judged by a jury, since such determination inevitably assumes identification of the accused article, to determine whether the article is directly covered by the literal scope. With regard to this issue, the CAFC judged in the Odetics case decision(*12) that whether an accused product or process performed the same function by the same structure, material, or acts, or equivalents thereof, was a question of fact.

3 Application of §112, ¶6 to Patent Examination

The courts have treated the scope of protection for a functional claim to be different from that for an ordinary claim, but the United States Patent and Trademark Office (hereafter the "USPTO") has considered §112, ¶6 to be a provision for infringement litigation, and has examined functional claims by a broad interpretation similar to ordinary claims in the patenting procedure.

In the In re Donaldson(*13) case, the CAFC stated that the "broadest reasonable interpretation" of a functional claim was merely the scope to which §112, ¶6 was applied, and strongly encouraged the USPTO to apply §112, ¶6 in the patent examination phase. In response, the USPTO revised its Manual of Patent Examining Procedure (MPEP) to apply §112, ¶6 also in examination(*14).

Accordingly, identification of the gist of the invention becomes an issue in patent examination. If the examiner finds that a prior art element (A) performs the function specified in the claim, that (B) is not excluded by any explicit definition provided in the specification for an equivalent, and that (C) is an equivalent of the means- (or step-) plus-function limitation, the examiner should provide an explanation and rationale in the Office action as to why the prior art element is an equivalent(*15). In the explanation as to why the prior art element is an equivalent, if the examiner indicates a prima facie case of equivalence based on at least one of the tripartite test, interchangeability test, insubstantial difference, or structural equivalence, based on a prior CAFC decision, the burden of proof will be shifted to the applicant, and the patent will not be issued unless the applicant proves that the prior art element is not an equivalent. Even if the applicant proves that the prior art element is not an equivalent, the examiner still has to examine the unobviousness analysis under §103(*16).

The applicant may prove that the prior art element is not an equivalent by reasons including teachings in the specification that specific prior art is not equivalent, teachings in the prior art reference itself that may tend to show nonequivalence, or affidavit evidence of facts tending to show nonequivalence(*17).

4 Standards for Invoking §112, ¶6

Once a claim is judged to be a functional claim, the special treatment under §112, ¶6 becomes applicable both in infringement litigation and patent examination, so the standard for determining what kind of description is a functional claim becomes a question.

Indeed, this point has been debated in many court decisions, and a standard of rebuttable presumption based on a special description form was established.

The MPEP summarizes the determination standards for invoking §112, ¶6 as follows, by citing many CAFC decisions(*18):

(a) the claim limitations must use the phrase "means for" or "step for";
(b) the "means for" or "step for" must be modified by functional language; and
(c) the phrase "means for" or "step for" must not be modified by sufficient structure, material or acts for achieving the specified function.

However, the omission of the phrase "means for" or "step for" does not preclude application of §112, ¶6.

(*12) 185 F.3d 1259, 51 U.S.P.Q.2d 1225 (Fed. Cir. 1999).
(*13) 16 F.3d 1189, 29 U.S.P.Q.2d 1845 (Fed. Cir. 1994).
(*14) MPEP §2181-186 (2001).
(*15) MPEP §2183.
(*16) *Supra* note.
(*17) MPEP §2184.
(*18) MPEP §2181.

Ⅲ Application of the Doctrine of Equivalents to Functional Claims

The applicability of the doctrine of equivalents to functional claims has been questioned in terms of overprotection and indefiniteness of the scope, and has been subject to considerable debate, but recent court decisions have indicated two determination standards.

1 Difference in the Timing of Analysis

(i) Chiuminatta case(*19)

In this case, the CAFC denied literal infringement, stating that the accused product was not a statutory equivalent under §112, ¶6, and the applicability of the doctrine of equivalents became the point of discussion. In the decision, Judge Lourie, while acknowledging that the statutory equivalents under §112, ¶6 and the doctrine of equivalents had different purposes and origins, declared that they were similar, in that they protected the substance of a patentee's right to exclude, by preventing mere colorable differences or slight improvements from escaping infringement by applying similar analyses of insubstantiality of the differences. He therefore judged that "a finding of a lack of literal infringement for lack of equivalent structure under a means-plus-function limitation may preclude a finding of equivalence under the doctrine of equivalents."

Nevertheless, he explained the role of the doctrine of equivalents that, since the doctrine of equivalents could protect against a variant technology at the time of infringement while literal infringement could not protect against after-arising technology, even if such an after-arising variant was denied of being a §112, ¶6 equivalent, this analysis should not foreclose it from being an equivalent under the doctrine of equivalents.

(ii) Al-Site case(*20)

As the accused technology in this case was not an after-arising technology either and no courts have applied the doctrine of equivalents based on this reasoning, the details of this case shall be omitted. In the course of the determination, however, Judge Rader cited some court decisions that analyzed the difference between an equivalent under the doctrine of equivalents and an equivalent under §112, ¶6, and analyzed that one important difference between §112, ¶6 and the doctrine of equivalents was the timing of the separate analyses for an "insubstantial change." He stated that an equivalent under §112, ¶6 must have existed at the time of the issuance of the patent, and it cannot embrace technology developed after the issuance of the patent, while such a technology could be also included under the doctrine of equivalents. He also added, while the function must be identical in the case of an equivalent under §112, ¶6 that premises literal infringement, the function needs only to be substantially the same in the case of the doctrine of equivalents.

2 When the Function is Not the Same, But Substantially the Same

The two court decisions clearly summed up the application of the doctrine of equivalents to functional claims based on the difference in the timing of analysis for application, but the prerequisite, "when having the same function," has an extremely important meaning. Specifically, it is a question of whether the doctrine of equivalents would be applicable when the function was not "the same" but was "substantially the same." This possibility was not denied in obiter dictum in the Al-Site decision, but about four months later, in the WMS Gaming case in 1999, the CAFC actually made judgment on this issue for the first time.

(1) WMS Gaming case(*21)

The plaintiff owned a patent relating to a slot machine which increased the gambling aspect by decreasing the odds of winning. The defendant, WMS Gaming, was selling a slot machine which also decreased the odds of winning, but while the patent had virtually increased the reel stop positions, the defendant's product first calculated the payoff and controlled the reel to stop at the position that represented that payoff.

In the decision, Judge Schall affirmed that the defendant's product was a statutory equivalent, but denied literal infringement for not performing a function identical to that described in the claim.

Nevertheless, in the determination of the doctrine of equivalents, he judged that infringement was found under the doctrine of equivalents based on the district court's decision that the two products were equivalents, since the function was substantially the same though not identical.

(2) Interactive Pictures case(*22)

The plaintiff, Interactive Pictures, owned a patent relating to a device for image viewing, which displayed a specific part of circular image data taken from a fish-eye lens camera by correcting it into a normal image. The patent claim in issue included an "image transform processor means for..." among other multiple functional elements, and the patent was characterized by the fact that the system converted the circular image by electronic

(*19) 145 F.3d 1303, 46 U.S.P.Q.2d 1752 (Fed. Cir. 1998).
(*20) 174 F.3d 1308, 50 U.S.P.Q.2d 1161 (Fed. Cir. 1999).
(*21) 184 F.3d 1339, 51 U.S.P.Q.2d 1385 (Fed. Cir. 1999).
(*22) 274 F.3d 1371, 61 U.S.P.Q.2d 1152 (Fed. Cir. 2001).

calculation, without mechanically moving the camera, preferably at real time rates. The defendant, Infinite, manufactured and sold a software package composed of image-making software that created a 360 degree panorama image by seaming images taken by a fish-eye lens camera or similar device, and a viewer that displayed a desired portion of a panorama image in an equirectangular format as a normal image.

In the appeal from the district court's decision that found infringement under the doctrine of equivalents, the defendant cited the Chiuminatta decision and claimed that the doctrine of equivalents was inapplicable since the "image transform processor means" limitation was not literally present in the defendant's product. In response, Judge Lourie summarized that the Chiuminatta decision and the WMS Gaming decision had different preconditions as follows: "In Chiuminatta, we held that a finding that a component of an accused product is not a structure 'equivalent' to the corresponding structure of a means-plus-function limitation for purposes of literal infringement analysis, precludes a finding that the same structure is equivalent for purposes of the doctrine of equivalents, unless the component constitutes technology arising after the issuance of the patent. However, when a finding of noninfringement under 35 U.S.C. §112, ¶6, is premised on an absence of identical function, then infringement under the doctrine of equivalents is not thereby automatically precluded." Based on this, the CAFC held that, in this case, as in WMS Gaming, the absence of literal infringement was due to a lack of identical function of the claimed means, not a lack of equivalent structure, and it did not preclude application of the doctrine of equivalents. In conclusion, the CAFC found no error in the district court's decision, which allowed application of the doctrine of equivalents, and affirmed the decision.

3 Summary

Although there had been negative views on the applicability of the doctrine of equivalents to functional claims because the word "equivalents thereof" is already stipulated in statutory law regarding the scope of protection for functional claims, the above two categories of application of the doctrine of equivalents have been clarified.

With regard to the former, when an accused product is denied as being a statutory equivalent in terms of structure, even though it performs the same function as the claimed functional element, the determination will be made based on a similar standard – insubstantial difference – and the doctrine of equivalents will be inapplicable. However, the literal scope of protection is determined at the time of the patent issuance, which under the doctrine of equivalents is determined at the time of infringement, so if the accused product is an after-arising technology, it could become subject to the doctrine of equivalents.

On the other hand, in the case of the latter the doctrine of equivalents will be applicable if the function is not the same, but substantially the same, and the difference between the accused product and the patented invention is insubstantial. Consequently, the scope of protection takes a seemingly odd structure in which the possibility of infringement arises again by choosing a structure farther away from the claim language.

Ⅳ Considerations on the Application of the Doctrine of Equivalents to Functional Claims

The scope of protection of a functional claim in the United States covers the structure corresponding to the function described in the specification and equivalents thereof, and additional protection under the doctrine of equivalents may also be enjoyed. In determining whether or not an accused product is covered by the literal scope of the claim, i.e., whether or not it is judged to be an equivalent of the structure corresponding to the function, determination standards that are almost identical to the doctrine of equivalents are being used as a result of various debates, although there was a discussion that the concept of the statutory equivalents and that of the doctrine of equivalents had different purposes and origins. Specifically, whether or not an accused product and the structure corresponding to the function are insubstantially different is judged by whether or not the way and the result are the same or a person skilled in the art could have known the interchangeability, on the basis that the function is the same. If the accused product having the same function is judged not to be a statutory equivalent as a result of this analysis, it will not be an equivalent under the doctrine of equivalents either, unless it is an after-arising technology. Since the tripartite test does not require the function to be the same, but only substantially the same, the doctrine of equivalents may also be applicable when the function is not the same, but substantially the same.

Is such a scope of protection appropriate as the scope of protection of a functional claim? In particular, when applying the doctrine of equivalents based on substantial identity of the function, the possibility for application of the doctrine arises again by deviating from the literal scope, on the condition that the function is not identical, which appears to take an abnormal structure. Can this be considered as appropriate protection?

The doctrine of equivalents is originally a

theory that tries to expand the scope of protection of a patent right to an area that does not necessarily coincide with the literal scope, in order to prevent unlawful imitators from escaping infringement by making substantially unimportant changes. On the other hand, §112, ¶6 is a theory of limitation that tries not to expand the scope of protection beyond what has actually been assumed by the inventor in compensation for allowing the inventor some freedom in expression by allowing claim description by a combination of functions performing the constituent elements of the invention. Since the two theories thus have different purposes and origins, it may not always be appropriate to use a determination method of applying the scope-expanding theory of the doctrine of equivalents to the determination of statutory equivalents under §112, ¶6. Indeed, an older court decision has indicated a view that the statutory equivalents under §112, ¶6 already include the equivalents under the doctrine of equivalents.

Nevertheless, prior to the establishment of such a determination method, there was only a method for determining statutory equivalents under §112, ¶6, and since §112, ¶6 was not properly functioning as a limiting theory, the literal broad scope of protection had been allowed as a result. Therefore, it is possible to say that the limiting theory of §112, ¶6 actually started to operate only after the CAFC accumulated case law on the method for determining statutory equivalents under §112, ¶6, and indicated that such determination could be approached by applying the doctrine of equivalents. In that sense, the approach using the doctrine of equivalents could be highly valued as an attempt to clarify the extent of the scope of protection, though it may include some inappropriate aspects.

When the two determination methods using the doctrine of equivalents are analyzed from such a viewpoint, the way in which the CAFC summed up – when an accused product having the same function is judged not to be an equivalent under §112, ¶6, on the basis of the difference in the timing of analysis, it is not an equivalent under the doctrine of equivalents either, unless it is an after-arising technology – is found to have been extremely explicit and clear-cut. Because there remains a problem that the significance of using the functional claim would be lost, i.e., the scope of protection becomes exactly the same as the case where the claim has been directly described by the structure corresponding to the function, the fundamental error is likely to be in the approach of applying the doctrine of equivalents itself, but it is considered to be an appropriate determination method in that it can clarify the extent of the functional claim.

What about the method of expanding the scope of protection by the doctrine of equivalents when the function is not the same, but substantially the same? Since this theory has only been applied in two CAFC decisions, analysis can only be made based on them, but some commonalities can be found between the two. Firstly, the invention was a software invention in both cases. Secondly, infringement had been found by the district court in both cases, the jury had found that the accused product was equivalent to the embodiment corresponding to the function. What impact do these two common links have, and in what kind of case is the doctrine of equivalents applicable by this method?

Functional claims can roughly be divided into two kinds based on the nature of the invention: a claim in which the combination of functions is the important factor and the means for performing it does not matter; and a claim in which the concrete means performing the function is the important factor and the functional expression merely expresses the means as a comprehensive concept. Generally, the former can be more often found for software inventions, and the latter for mechanical inventions. Since the important factor for a software invention is its function, as long as the combination of functions executing the invention is described to the extent that can be enabled by a person skilled in the art, the enabling requirement would be met without needing to disclose detailed programs. Meanwhile, a functionally described claim must correspond to the embodiment disclosed in the specification according to §112, ¶6, and in infringement litigation, the literal scope of a software invention described by functional elements would be judged to be the machine executing the algorithm, described in the embodiment as the structure corresponding to the function, as well as its equivalents. In other words, although the important factor for a software invention is the claim expressed by the functional language as such, instead of the concrete means, the comparison will be made between the concrete means and the accused product in the determination of literal infringement, and once the accused product is judged not to be covered within the scope of the embodiment and statutory equivalents, the doctrine of equivalents will not be applied unless it is an after-arising technology. Such a narrow scope of protection would be contrary both to the purport of including software inventions into patentable subject matter as well as to the purport of establishing §112, ¶6.

The above analysis reveals that the theory of allowing application of the doctrine of equivalents when the function is not the same, but substantially the same, is properly serving a supplementary role as a means for saving inventions from imitators who escape infringement by only making slight alterations to take advantage of the fact that functional claims are interpreted in a limiting manner, in cases where the function itself is

relatively important.

However, such a precondition – the doctrine of equivalents could be applicable based on substantial identity of the function when the function itself is relatively important – has not been indicated in court decisions. Since this theory would also be applicable to existing machines and other inventions as well, is there a possibility that it would actually be applied to such inventions, allowing the scope of protection to become unlimitedly broad? In the case of a software invention, it is easy to organically separate or combine the functional element with other elements, but in the case of a mechanical invention, separation or combination of the functional elements would make the corresponding structure fundamentally different. Accordingly, in the case of existing mechanical and other inventions, even when an accused product and the claim were judged to have a substantially identical function, there would be a relatively high possibility that the way and the result will be judged to be different. Nevertheless, as indicated by the second point in common, the district court had found infringement in both cases, and in that instance, the jury had found the accused product to be equivalent to the embodiment corresponding to the function. In light of this precondition, the CAFC merely allowed the doctrine of equivalents on the basis that, although literal infringement was denied because the function was different, the function was substantially the same, and the two could be considered as statutory equivalents based on the above precondition. Thus, it was not indicated as a guideline on a determination method. Accordingly, it may be too hasty to conduct such analysis at present.

As a conclusion, between the two guidelines indicated for application of the doctrine of equivalents to the scope of protection of functional claims in the United States, the one based on the timing of analysis has succeeded in clearly summing up the extent of the scope of protection of functional claims. On the other hand, the determination method for application of the doctrine of equivalents based on substantial identity of the function involves the risks of also unlimitedly expanding the extent of the scope of protection for existent mechanical and other inventions, even though it is serving a supplementary role in protecting inventions like software inventions in which the function itself is the important factor, so attention should be paid to future trends of related court decisions.

Japan is in the phase of accumulating court decisions on determination standards for the doctrine of equivalents, so it is not easy to conduct a comparative study with the United States. Nevertheless, although confusion occurred in the United States due to the existence of a provision under the statutory law, the extent of functional claims is gradually being elucidated through the CAFC's accumulated efforts, and Japan has much to learn from the course of development of such discussions in the United States.

Ⅴ Closing Chapter

Literal expressions are inevitably ambiguous by nature, but inventors must express their inventions in words. The words chosen by an inventor, a patent claim, could be expressed by concrete things alone in some cases and would have to include abstract expressions in other cases. If abstract expressions were completely banned, there would be inventions that cannot be properly expressed, and if such expressions were overly protected, it would diminish the motivation of a third person to develop new technology. Therefore, when the literal claim language is too abstract to understand its true meaning, it is necessary to learn the invention originally intended by the inventor by referring to the specification. Interpretation of functional claims is considered to include such problems in which the basic concepts of the relationship between freedom of expression and appropriate interpretation are compressed.

In the United States where the existence of a special provision on interpretation of functional claims had brought about confusion, efforts have been made toward clarifying the standards through accumulation of case law. Thus, Japan, which has been taking flexible actions due to lack of such a provision, would be able to gain many useful insights from the discussions in the United States(*23). While functional claims are frequently used in inventions such as software inventions that are characterized by the function itself, the application of the doctrine of equivalents based on substantial identity of the function may serve the role to supplement the limiting interpretation of the functional claims in such fields of technology where the function itself is important, so the theory of its application should be analyzed even further by observing the future trends of related court decisions.

(*23) See Chapter IV of the report for the current situation in Japan.


IIP
bulletin