

# Rules for Claim Construction (I)

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In patent cases, claim construction plays a crucial role. Difference in claim interpretations can directly lead to disparity in conclusions. Thus, it is necessary to delve into various factors that affect claim construction in practice.

Article 64 of the Patent Law reads “the scope of protection of the patent right for invention or utility model shall be determined by the terms of the claims. The description and the appended drawings may be used to interpret the claims.” According to the above provision, the scope of protection of a claim shall be, in principle, determined “on the basis of” the contents of the claim. The description and the appended drawings may be used to “interpret” the claims, but cannot further “define” them.

Claim construction involves two aspects: one is to determine the scope of terms, i.e., whether all the terms recited in a claim shall be taken into account, and if not, which of them shall be considered; and second is to determine the meaning of the terms. The characteristics of language dictate that in many cases, the same term may have different meanings or different terms convey the same meaning. Therefore, after delineating the scope of terms to be considered, the specific meaning of the term having different meanings needs to be further determined, during the process of which the description and drawings may be referenced.

This article will analyze the rules for claim construction generally from the above two aspects. As far as the scope of terms is concerned, in principle, it shall not extend beyond the scope of disclosure contained in the claims unless there are contents specified by implication. However, not all the recited words delimit the scope of protection of the claim. Only the terms defining the subject matter have the limiting effect, and the terms with no limiting effect do not need to be considered even if they are recited in the claim. As far as the meaning of the terms is concerned, the terms shall be given the meaning as understood by one of ordinary skill in the art, unless specifically defined in the description or drawings, and in the latter case, the rest of the description and drawings shall not be used to further delimit

it claims.

## I. What does “determined by the terms of the claims” mean?

**1. The scope of protection of a claim shall not extend beyond the scope defined by the terms of the claims unless there are technical features implicitly specified.**

In principle, the terms used for claim construction shall not extend beyond those recited in the claims. In the determination of the scope of protection of a claim, the terms in both the preamble portion and the characterizing portion shall be taken into consideration. However, that the scope of protection of a patent shall be determined by the terms of the claims does not mean that the terms not recited in the claims are excluded under any circumstances, or that all the terms recited in the claims must be considered. In some cases, where a certain technical feature, though not being explicitly recited in a claim, is recognized as a necessary part of a technical solution according to the claim as a whole, it shall be taken into account in the determination of the scope of protection of the claim.

For example, in “a table, characterized in that the table is made of a metallic material”, although the technical feature “a table top” is not explicitly recited, those skilled in the art know that a table must comprise a top, which is an implicitly defined technical feature.

The following example is related to a rotary wheel used for a projector, which claims “a rotary wheel having a circular disc shape, comprising a luminescent light emitting area in which a luminescent material is provided along a circumferential edge of the circular disc shape; an annular step portion which is formed at a different level from a reference plane which is a surface where the luminescent light emitting area is formed; and a balance correction material which is placed at the annular step portion, wherein the balance correction material is placed at the annular step portion so as to even a rotational balance when the rotary wheel is rotated; wherein the step portion is an annular sur-

face step portion which is provided at a center of the rotary wheel so that the luminescent light emitting area is defined as a raised portion, wherein the surface step portion is formed on an inner circumferential side of the luminescent light emitting area, and wherein the balance correction material is placed at the surface step portion.”

The subject matter of said claim is “a rotary wheel having a circular disc shape”, which is not further defined by any single word in the entire claim. Literally speaking, it may be understood as having a solid circular disc shape. But those skilled in the art surely know that a motor shaft is installed in the center of the circular disc in such a product, and there must be a hole at the center of the circular disc for the sake of assembly, or in other words, they will understand the circular disc shape as a hollow annular structure as claimed by the patentee. For this reason, the court determined that the circular disc having a hole at its center is an implicitly defined technical feature.<sup>1</sup>

## **2. The terms having no limiting effect on the subject matter of a claim shall not be considered.**

A misunderstanding prevails in practice, i.e., since Article 64 of the Patent Law stipulates that the scope of protection of a patent shall be “determined by the terms of the claims”, all the terms in a claim must be taken into consideration, which is absolutely wrong. Ideally speaking, a claim shall not contain a non-limiting term. But in practice, this requirement is hard to satisfy even for many granted claims. Therefore, those terms having no limiting effect must be excluded in the determination of the scope of protection of claims.

Whether a word used in a claim defines the scope of protection thereof mainly depends on whether the term functions to delimit the subject matter of an invention. There are two types of claims, namely product claims and method claims. The former is directed to physical entities, and generally defines the shape, structure, material, etc. of products, whereas the latter is directed to actions, especially activities with element of time or process, which specifically comprise manufacturing methods, methods of use, communication methods and the like.

Generally speaking, if a term does not alter the product or process, it will not affect the scope of protection of the claims. A simple test for this issue is whether a different product or method will be derived after the deletion of a term. If the answer is no, then the term has no limiting effect. In practice, such cases usually involve technical fea-

tures that are irrelevant to the subject matter.

For example, “a table, characterized by the steps of: first making a table top and then making table legs”. This claim is a product claim according to its subject matter, and shall be defined from the aspects of, e.g., components, structures and positional relationships. However, it is defined by a manufacturing method, instead of the above-mentioned aspects. Irrespective of which is made first, top or legs, the tables made by either method are the same as they each consist of the table top and table legs. Therefore, the feature “first making……then making” in said claim has no limiting effect.

However, in the claim “a table, characterized in that a table top and table legs are made by injection molding”, although “made by injection molding” is also a feature about manufacturing method, it implies the limitation to the material of the table top and table legs, i.e., the material is limited to those suitable for injection molding. Tables manufactured by and not by this method are at least different in terms of materials, which in turn makes them different products. Hence, this feature has a limiting effect.

In practice, words in a claim can be generally divided into three types according to their limiting capability: first, undoubtedly limiting terms, such as the components, materials, structures, weights in a product claim; second, obviously non-limiting terms, which usually include non-technical features, technical effect and features on mechanism or theory; and third, terms possibly having a limiting effect, which usually include manufacturing methods, functional features, use-related terms, installing methods and the like. Among them, there is usually no dispute about the first type. Hence, this article is mainly going to discuss the other two types.

### **(1) Non-technical features have no limiting effect**

Since an invention or utility model protects a technical solution, words which are irrelevant to technology cannot affect the scope of protection of a claim. If the claim contains such expressions, they have no limiting effect.

This example is related to a teaching appliance, which claims “a word teaching appliance for a language formed by 26 letters, characterized in that: 26 language words are selected according to the alphabetic order of the first letter thereof, and a picture representing the meaning of the language word is printed on a card to form a picture card, the pattern of which is arranged as a poker card, namely, a large picture is printed at the center and word spelling in

small font is printed in the upper left and the lower right corners, and the word spelling is printed on another card to form a word card, the pattern of which is arranged as follows: word spelling in large font is printed at the center, and small pictures are printed in the upper left and the lower right corners, in such a way to form the language word teaching appliance consisting of 26 picture cards and 26 word cards”.

In this case, Claim 1 recites the selection of words used for the picture cards and the word cards (namely, 26 language words are selected according to the alphabetic order of the first letter thereof.....to form the language word teaching appliance consisting of 26 picture cards and 26 word cards), and the pattern of the picture cards and the word cards (that is, the pattern of the picture card is arranged as a poker card, namely, a large picture is printed at the center and word spelling in a small font is printed at the upper left and the lower right corners, and the word spelling is printed on another card to form a word card arranged as follows: word spelling in large font is printed at the center, and small pictures are printed in the upper left and the lower right corners). Although the above elements are recited in claim 1, they only define what are on the cards and have nothing to do with the technology, and will not affect any technical features, such as structure, of the teaching appliance as claimed in the present application. Hence, those contents have no limiting effect and are not technical features that need to be taken into account.<sup>2</sup>

This example relates to a utility model patent, which claims “1. A layout structure of a fast settling soft foundation for narrow drainage plates, formed by implanting a plurality of drainage plate sets into the soft foundation, wherein each of the drainage plate sets comprises a plurality of first drainage members and a plurality of second drainage members which are arranged alternately, the first and second drainage members adjacently disposed on the same drainage plate set are obliquely disposed, the plurality of first drainage members and second drainage members on the same drainage plate set are transversely spaced, and the plurality of drainage plate sets are longitudinally spaced.”

This technical solution includes two main parts, namely drainage plates (10, 20) and soft foundation (30), wherein the soft foundation is actually earth. The plurality of drainage plates are implanted into the soft foundation (i.e., earth) in a certain manner, such that the drainage plates are arranged with a certain layout structure therebetween. The

key to understanding the technical solution of this claim is to determine whether the soft foundation is a limiting feature.

Article 2.3 of the Patent Law reads that “utility models mean new technical solutions proposed for the shape and structure of a product, or the combination thereof, which are fit for practical use”. As stipulated in Part I, Chapter Two, Section 6.1 of the Guidelines for Patent Examination, “according to Article 2.3, patent for utility model can be granted only for products. The products herein shall be objects manufactured by industrial methods, having definite shape and structure, and occupying a certain space. All the processes and the objects which exist naturally and are not made by man are not the subject matter protected by the patent for utility model.”

In light of the above provisions, the “product” protected by a utility model patent “as a whole” should be manufactured by an industrial method. Where a utility model claim contains an object which exists naturally instead of being made by man, the object will render it impossible to manufacture the claimed product as a whole by an industrial method, and therefore the subject matter of the claim is not a “product” protected by a utility model patent. This is the situation of the present case. Since the soft foundation (i.e., earth) renders it impossible to manufacture the entire claimed product by an industrial method, said claim does not meet the requirement for subject matters for utility model patents under Article 2.3 of the China’s Patent Law.<sup>3</sup>

Some people argue that the soft foundation can be considered as the usage environment for the product, and the usage environment can be a natural object which is not made by man. Therefore, the technical solution cannot be determined as non-patentable just because it contains a natural object and the related feature shall be considered in the determination of the scope of protection of the patent. This argument confuses the usage environment for a “product” with that for “a technical feature of the product”. Generally speaking, a natural object that serves as the environment of use in a claim shall be the environment for using the “product”, rather than a specific “technical feature”. For example, in a claim protecting “a water purification device used for rivers, characterized by.....”, the water purification device is a product, and rivers are the usage environment for said device. The water purification device and the rivers exist independently. Such a limitation manner does not violate the requirement for subject matters under the patent law.

The product defined in the claim as mentioned above is a “layout structure”, wherein the soft foundation is the usage environment for a technical feature (“drainage plates”), not the entire product (“layout structure”). In other words, the natural object in said claim constitutes a part of the product rather than exists independently from the product. The main reason that such a limitation does not meet the requirements for subject matters is that only drainage plates in the technical solution can be manufactured when such a natural object as the soft foundation constitutes a part of the product, that is to say, the soft foundation cannot be manufactured and accordingly the positional relationship between the drainage plates and the soft foundation cannot be manufactured as an independent product. A product that cannot be manufactured or a technical solution that cannot be implemented in products does not qualify as a patentable subject matter. For the water purification device as mentioned above, however, the product does not include any natural object as they exist independently, and the recited natural object will not make it impossible to manufacture or sell the water purification device. Hence, the drafting manner of said claim does not violate the requirements for subject matters. In fact, the technical solution in the drainage plate case should be drafted as a method claim, which does not exclude the use of a natural object. Nevertheless, a method claim is only eligible for invention patent, and thus the patent applicant will not be unable to benefit from a utility model patent, which can be granted without substantive examination.

(2) Features concerning the overall technical effect, as well as related mechanism features, usually have no limiting effect

Before analyzing the limitation by technical effect, it is necessary to distinguish an “overall technical effect” from a “function”. Generally speaking, function and effect are quite similar and often used interchangeably in practice. But the technical effect in the context of claim construction herein refers to the “overall technical effect” only and is directed to the function or effect of the entire “technical solution”, rather than a specific “technical feature”. The function or effect of a technical feature will be discussed in the section relating to functional features.

Each technical solution has its corresponding overall technical effect, and it is very common to define a claim by terms in relation to the technical effect. However, since the technical effect is an incidental effect resulting from the

technical solution and cannot conversely limit the technical solution, such terms generally have no limiting effect unless in a use claim (which is one type of method claims). Hence, it is generally not necessary to consider features relating to the overall technical effect in a claim.

The overall technical effect has no limiting effect on the grounds that subject matters eligible for patent protection, though in the form of technical solutions, are in their nature the creative work of patentees for achieving the technical solutions. Meanwhile, although the technical effect is the goal pursued by the technicians, the creative work does not lie in the goal itself, but only in the process of realizing it. And the achievement finally made through the process is the specific technical solution. Hence, subject matters eligible for patent protection should be technical solutions, rather than technical effects. For instance, although curing every cancer is the common pursuit of all humankind, the patent law obviously does not protect this goal, but only protects the specific technical solutions that are created for achieving this goal. As for a claim having the subject matter of “a compound capable of curing all cancers”, the technical effect of “capable of curing all cancers” has no limiting effect, but the compound having said technical effect can be protected as the technical solution for achieving the goal under the patent law.

Since a technical effect is objectively produced by the implementation of a technical solution, limitation by means of the technical effect becomes redundant as long as a claim has clearly recited all the technical features necessary for achieving the technical effect, and prohibiting the use of technical effects for limitation does not affect the delimitation of the technical solution. For instance, as stated above, if “capable of curing all cancers” is the objective effect achieved by the compound, conferring protection on the compound means giving protection to the patentee’s creative work in achieving the technical effect. In contrast, the complete prohibition of functional limitations may hamper claim drafting, and therefore render the patentee’s technical contributions ineffectively protected. The functional claim terms will be discussed in detail later.

This example is related to a preparation, which claims “1. A composition suitable for topical application comprising a continuous phase and at least one discontinuous phase, said composition comprising at least one …, at least one …, wherein … the composition is stable, wherein stability is measured as a no more than 5% reduc-

tion in the amount of vitamin D or vitamin D analogue and a no more than a 5% reduction in the amount of corticosteroid with respect to the original amounts after 3 months of storage in a sealed glass container at 40°C.”

The last part of the claim specifically describes the stability effect of the composition. Because the technical effect pertains to the entire technical solution, it is determined in the judgment that the technical effect has no limiting effect, to which the patent applicant raised no objection.

In addition to the technical effect, the mechanism underlying said technical effect does not have a limiting effect either. Otherwise, there may occur a situation in which the disputed claim would be found both novel and inventive as long as the mechanism is not disclosed, even if the prior art has disclosed all other features of the claim. This result is contrary to the basic principle of patent law that the specific application (namely, technical solution) of the mechanism, rather than the mechanism itself, shall be protected.

For instance, suppose there is a technical solution in relation to muscle relaxation, which claims “a muscle relaxation method, characterized in that an athlete enters a liquid nitrogen freezer and stays for 2 minutes, in such a way that muscles are effectively relaxed based on the Leidenfrost effect and muscle inflammation is reduced”. The Leidenfrost effect in said claim is the mechanism by which the technical solution allows for quick muscle repair. Even though creative efforts are required to discover the mechanism, if the prior art has disclosed an identical muscle relaxation method except the mechanism, the abovementioned technical solution also lacks novelty because the mechanism cannot limit the technical solution.

Here is also an example concerning the description about mechanism, which claims “use of ranolazine for preparing a drug for reducing or preventing metastatic behaviour of cancer cells in voltage gated sodium channel (VG-SC) expressing cancer by the effect of at least reducing the persistent part of the VGSC current without eliminating the transient part, wherein the dosage of Ranolazine has said effect in the cancer cells in VGSC expressing cancer without killing the cancer cells.”

This technical solution is a claim of pharmaceutical use, and ranolazine and its corresponding dosage render it possible to reduce or prevent metastatic behaviour of cancer cells in the VGSC expressing cancer. The feature “by the effect of at least reducing the persistent part of the VG-SC current without eliminating the transient part” only de-

scribes the mechanism by which ranolazine, at corresponding dosage levels, produces the abovementioned effect, rather than the technical means. Hence, said feature has no limiting effect.<sup>4</sup>

### (3) Limiting effect of functional features

Another type of limitation that is often found in claims is functional features. Different from the overall technical effect, the functional features do not necessarily have a limiting effect. Specifically, if those skilled in the art know how to perform the function without reading the description, the functional features have a limiting effect and shall be understood as embracing all the means for realizing the function; and if those skilled in the art do not know the way to perform the function without reading the description, the functional features have no limiting effect.

It should be noted that functional features in the patent invalidation cases encompass all the technical features as long as they are defined by their functions. This is different from the concept of “functional feature” in the Interpretation (II) of the Supreme People’s Court on Several Issues Concerning the Application of Law in the Trial of Disputes over Patent Infringement (hereinafter referred to as the “Infringement Interpretation II”), Article 8 of which reads that “a functional feature refers to a technical feature in which the structures, compositions, steps, conditions or the relations therebetween are defined by their functions or the effects achieved in the invention, except that a specific implementing mode for achieving the above functions or effects can be directly and specifically determined by those ordinarily skilled in the art only by reading the claims.”

Type I: Means for carrying out the function of the feature can be envisaged without the description

If the means for performing the function of a functional feature can be envisaged by those skilled in the art without reading the description, such a feature can limit the claim. One of the characteristics of claims is generalization, and defining by function is a widely applied way of generalization, though not encouraged by the Guidelines for Patent Examination. After all, means-plus-function limitation literally includes all the means which can realize the function, and covers a large scope of protection, which is likely to provide the patentee with a monopoly larger than his technical contributions. As stipulated in Part II, Chapter Two, Section 3.2.1 of the Guidelines for Patent Examination, “for product claims, features of function or effect shall be avoided as far as possible to be used in defining the invention. It is only

when a certain technical feature cannot be defined by a structural feature, or it is more appropriate to be defined by a feature of function or effect than by a structural feature, and the function or effect can be directly and affirmatively verified by experiments or operations as stated in the description or by customary means in the art, that definition of an invention by features of function or effect can be permissible.”

Inventions never come out of thin air but result from further research and development based on existing technologies. Hence, if the contents generalized by functional features are known to those skilled in the art, such generalization will not obstruct the public’s understanding of patent documents. Meanwhile, an inventor’s creative work lies in the technical contributions he made, but not the existing technologies. Therefore, means-plus-function generalization of the contents of an implementing mode known to those skilled in the art will not result in overboard protection that goes beyond the scope of inventors’ technical contributions. Under the circumstances that the Guidelines for Patent Examination neither encourage nor prohibit generalization with function, such features properly balance the interests between patentees and the public and have a limiting effect. This is also one of the circumstances where means-plus-function limitation is allowed according to the abovementioned provision of the Guidelines for Patent Examination.

The revision of the Guidelines for Patent Examination in 2020 also addressed this issue. In the Draft Amendment of the Guidelines for Patent Examination (second draft for comments) released on 10 November, 2020, the expression “features of function or effect shall be avoided as far as possible to be used in defining the invention” was amended to “features of structure are generally used to define the invention”, and that “it is only when …… that definition of an invention by features of function or effect can be permissible” was amended to “features of function or effect can be used to define an invention when ……”. No substantial changes were made to the rest of this provision. The China National Intellectual Property Administration pointed out in the revision explanation that the purpose of the above revision is to “return the right to choose whether to use the function or effect limitation to the applicant through revision, such that the applicant can decide how to formulate claims on his own according to his actual needs and for the purpose of better patent protection”.

In patent invalidation cases, if those skilled in the art know the means suitable for carrying out the function of a functional feature, the feature shall be understood as embracing all the means that can perform the function. It is stipulated in Part II, Chapter Two, Section 3.2.1 of the Guidelines for Patent Examination that “technical feature defined by function in a claim shall be construed as embracing all the means that are capable of performing the function”.

For instance, in a claim drafted as “an elastic buckle structure for a connecting wire of an air conditioner, comprising a structural support (1) for fixing the connecting wire and an elastic buckle, …… the elastic buckle is fixed on the structural support (1), ……”, “structural support” can be regarded as a functional feature. Because those skilled in the art generally know the specific means to support, said function has a limiting effect and shall be construed as all the members capable of realizing the supporting function.

Type II: Means for carrying out the function of the feature cannot be known without the description

It would be a different situation if the means for performing the function of a functional feature are not clear for those skilled in the art without reading the description. Patent Law confers protection on technical contributions, which are obviously directed to the technical means to carry out a function rather than the function itself. For instance, one of the common pursuits in the pharmaceutical field is to find a medication that can cure all cancers. However, if those skilled in the art do not know how to carry out the function but only recite the function in the claims, it makes no technical contributions at all. Under such circumstances, the function itself should not have a limiting effect, which means the functional feature does not need to be considered when determining the distinguishable feature in the assessment of inventive step.

It should be noted that even if corresponding means for performing the function of the aforesaid feature are disclosed in the description, the function does not have a limiting effect. Under such circumstances, the patentee’s technical contributions only lie in the technical means described in the description, but not all the means covered by the function. If the means-plus-function generalization as such is allowed, the scope of protection of the claim will extend beyond the technical contributions and the claim will not be supported by the description. As stipulated in Part II, Chapter Two, Section 3.2.1 of the Guidelines for Patent Examination

tion, “if the function is carried out in a particular way in the implementing modes of the description, and those skilled in the art would not appreciate that the function could be carried out by other alternative means not described in the description, …… , then the means-plus-function limitation as embracing the other alternative means …… shall not be allowed in the claim”. According to this provision, even when the description recites related means, if those skilled in the art do not know any other means, the function should not be used for generalization. In other words, if it is drafted as a functional feature, the claim will not be supported by the description. Those contents not supported by the description extend beyond the technical contributions made by the patentee, and thus, should not be incorporated into the scope of protection in claim construction.

According to examination logic, whether the claim is supported by the description must be examined before the assessment of novelty and inventive step. Thus, if the claim lacks support by the description, it shall be rejected or declared invalid and its inventive step will not be further evaluated. Undeniably, things are never the same in practice. Under some circumstances, claims which are not supported by the description can still go through the inventive step assessment. For instance, in an invalidation case concerning a utility model patent which does not need to undergo a substantive examination, the scope of examination depends on the request of an invalidation petitioner. If the invalidation request is based barely on lack of inventive step without mentioning the support issue, an examiner can only make comments on the inventive step. Thus, it is still necessary to first, at least judge whether the functional features are supported by the description so as to avoid the grant of patents to patentees for technical contributions that they did not make.

The following is an example falling within such circumstances.

“1. A method of increasing the solubility or dispersibility of a powder or tablet based on a carbohydrate matrix by subjecting the powder or tablet or a precursor therefor to treatment with a gas so that gas is entrapped in the powder or tablet, which comprises providing the powder or tablet with sufficient closed porosity so that gas entrapped therein promotes dissolution or dispersion on contact with water.”

Although said claim recites relevant treatment process, it does not substantively define how to treat but only defines “so that gas is entrapped in the powder or tablet” and “pro-

viding the powder or tablet with sufficient closed porosity” from the perspective of function. Since those skilled in the art do not know how to carry out the above functions on the basis of the description, said function cannot limit the claim. As far as the overall claim drafting is concerned, in addition to the functional features, said claim also uses technical effects as limitations, namely, “increasing the solubility or dispersibility of a powder or tablet based on a carbohydrate matrix” in the subject matter and “so that gas entrapped therein promotes dissolution or dispersion on contact with water”, which do not have a limiting effect as well. In other words, only a very small part of the claim defines the scope of protection.

Here is another example.

“1. A process for drying a polymer by means of an inert gas comprising: drying the polymer particles in a first drying chamber having an annular shape, where ……; further drying the polymer particles in a second drying chamber comprising a tubular body concentric to said first drying chamber, where the tubular body forming the second drying chamber is designed with a reduced volume, and the polymer particles descend in a plug flow contacting a second stream of said inert gas; ……”

This is a method claim, which involves the definition of a “plug flow”. The “plug flow” is a specific flow state, and the claim only recites “the polymer particles descend in a plug flow” without defining how to form such a state, that is to say, it does not make clear which technical features form the plug flow. In this regard, whether the feature “plug flow” has a limiting effect depends on whether those skilled in the art know how to perform this function. In this case, there is no evidence proving that those skilled in the art know any corresponding means. Hence, said feature has no limiting effect and does not need to be considered in technical comparison.

In fact, the patent applicant in this case admitted during the court hearing that although the formation of a plug flow in the second drying chamber is defined in the claim, it is only an ideal state and cannot be completely realized for the reason that the polymer particles will be inevitably fluidized when they descend to the vicinity of the bottom of the second drying chamber. This means that the patentee does not know the specific means for realizing such a function. Under such circumstances, if said feature is considered as defining the scope of protection of the claim based on the claimed function and further as inventive, it is surely incom-

patible with the technical contributions made by the patent applicant.<sup>5</sup>

In practice, there is a view that for the same claim, it shall be construed in exactly the same way in the patent infringement proceedings and patent invalidation proceedings. But it is not true in practice. One of the major differences between the above two proceedings is the disparity in the rules for construing functional features. In judicial interpretations on patent infringement, the Supreme People's Court sets forth provisions for the functional features from three perspectives, namely, definition, construction and scope of protection.

As for the definition of the functional features, Article 8 of the Infringement Interpretation II makes a limited interpretation, that is, they are only limited to the functional features whose functions are carried by the means that are not directly known to those skilled in the art, and not all the features containing functional words can be considered as functional features. Of course, in some cases, it is necessary for the parties concerned to submit evidence to prove which technical features belong to the functional features as defined in the judicial interpretation.

As for the rules for construing the functional features, they are also restricted by the judicial interpretation. Article 4 of the Interpretation of the Supreme People's Court on Several Issues Concerning the Application of Law in the Trial of Disputes over Patent Infringement (hereinafter referred to as the "Infringement Interpretation") reads "for technical features described by function or effect in a claim, the people's court shall determine the content of these technical features according to the specific implementing mode of the functions or effects described in the description and drawings or an equivalent implementing mode". That is, technical features described by function or effect only cover the specific means to perform the functions or effects described in the description and drawings and the equivalents thereof, rather than all the possible means.

The main reasons for applying the above rules in civil infringement cases are that claims are reasonable generalization based on embodiments. Generalization by function, as one of the common ways of generalization, often uses terms, such as conductors, heat sinks, adhesives, amplifiers and transmissions, that have become commonly used terms in the art, and those skilled in the art also know how to carry out related functions. Therefore, functional features should not be totally prohibited; or otherwise, some embodi-

ments cannot be reasonably generalized. Further, interpreting the functional features that meet the above requirements of the judicial interpretations as embracing all the means for performing their functions will not impair the public interest.

However, it should also be noted that patents protect technical solutions, not functions. For both product and process patents, those skilled in the art are more concerned about the technical solutions that can be implemented. Thus, it is not proper to define a feature by its function without restriction. For a function carried by the means which is not known to those skilled in the art without reading the description, functional generalization is unreasonable and will not be supported by the description. Therefore, this type of drafting is not allowed.

Despite the above requirements for claim drafting, in practice, not every claim is formulated in compliance with them. In many cases, technical features carried out by the means which are not known to those skilled in the art are still defined by function, and the related claims are granted for various reasons. The technical contributions of such features limited by function are only confined to the specific means recited in the description. If they are construed as embracing all the means that are capable of performing the function, the patentee will be granted with protection beyond his technical contributions. Therefore, a reasonable approach in civil infringement cases is to confine the functional features to their specific implementations in the description so as to make the protection compatible with the technical contributions, which is the reason underlying the above judicial interpretations.

Moreover, it should be noted that the above judicial interpretations also stipulate the scope of functional features as encompassing both identical and equivalent technical features. Article 8.2 of the Infringement Interpretation II reads "where comparing with the technical feature that is necessary to achieve the functions or the effects mentioned in the preceding paragraph as recorded in the description and appended drawings, the corresponding technical feature of the accused infringing technical solution can adopt substantially the same means to perform the same functions and achieve the same effects, and can be contemplated by those ordinary in the art without creative efforts upon occurrence of the accused infringing act, the courts shall find that said corresponding technical feature is identical or equivalent to the functional feature".

In the application of this provision, the more contentious issue is what constitutes “substantially the same means”. Generally speaking, equivalent technical means shall at least share a substantially identical technical concept, and technical means under dissimilar technical concepts should not be regarded as equivalent technical means. However, the technical means under the same concept do not necessarily constitute equivalence. If they are conventional technical means under one technical concept, they can be viewed as equivalents. But if an alleged infringing product uses a technical means that is not disclosed for those skilled in the art prior to the application date, they cannot be deemed as equivalent technical features even though they originated from substantially the same technical concept.

Below is an infringement case involving a patent entitled “Humidifier”, in which claim 1 is drafted as follows:

“1. A humidifier, which is composed of a water tank (1), a cylindrical wet film (2), a driving means (3), a fan (4), a housing (5), and a water level controller (6), wherein the driving means (3) drives the cylindrical wet film (2) placed horizontally in the axial direction to rotate, the bottom of the cylindrical wet film (2) is immersed in the water of the water tank (1), the water tank (1) is connected with tap water through the water level controller (6), and the housing (5) is provided with an air inlet (10) and an air outlet (11), characterized in that: the air inlet (10) is provided at one side of the outer face of the arc surface of the cylindrical wet film (2), and the fan (4) is provided at the other side of the outer face of the arc surface of the cylindrical wet film (2); blocking plates (8) are provided at both axial ends of the cylindrical wet film (2); a sealing strip (7) is provided at the inner side of the housing (5) corresponding to the top of the cylindrical wet film (2), and meanwhile a blocking (9) is provided at the inner side of both ends of the air inlet (10) of the housing (5) and at the outer side of the blocking plate (8).”

Regarding the interpretation and the scope of protection of the functional features in this case, the patentee asserted that the feature “water level controller (6)” in the patent in suit is a technical feature defined by function, and should be construed as embracing all components capable of controlling water level. Since the three related components in the accused product are used together for water level control, those components are covered by the water level controller of the patent in suit.

In this case, the evidence submitted by the patentee

cannot prove that those ordinarily skilled in the art can directly and specifically determine the means for performing the function or effect of the water level controller after reading the claims, the feature “water level controller” is a functional feature as stipulated by Article 8 of the Infringement Interpretation II.

As for the construction of the functional feature, in the light of Article 4 of the Infringement Interpretation, it only covers the specific means for carrying out its functions or effects described in the description and drawings as well as the equivalent thereof. Although the water level controller is not specifically described in the description of the patent in suit, it is shown in the drawings. Even though drawings are schematic views, it can at least be determined therefrom that the water level controller is a separate component located in a particular position. On such a basis, where the patentee agreed that the water level control is jointly achieved by three components in the accused product, instead of by a single one, the accused product and the patent in suit do not use the “same” technical features to control water level.

As for whether the components of the accused product are equivalent to the functional feature, as mentioned above, equivalent technical means should at least originate from substantially the same technical concept and technical means under different technical concepts generally should not be regarded as equivalents. In this case, it can be seen from the embodiment that the concept of the patent in suit is to use a single component to adjust water level, whereas that of the accused product is to use three components jointly to do so. Their underlying technical concepts are not the same. Therefore, though having the same function and effect, they are not equivalent functional features.<sup>6</sup>

#### (4) Limitation by use-related features

In some cases, claims are defined by the field of use, environment of use, purpose of use, method of use and the like. As mentioned above, whether such an element has a limiting effect depends on whether it delimits the subject matter. If the disputed claim is a product claim, it is necessary to analyze whether the above features define the structure, material or the like of the product. Similarly, if it is a method claim, it is necessary to consider whether those features affect any step of the method.

This example relates to a sample mixing device, which claims “a sample mixing and feeding device, characterized in that it comprises two mixing drums (2) with the same structure and arranged side by side in a mounting frame

(1), and the tops of two said mixing drums (2) are respectively communicated with a water outlet of a sampling pump through a water inlet pipe (11), and the bottoms of two said mixing drums (2) are each communicated with a sample feeding pipe (13)".

In this case, the patentee argued that one of the differences between the disputed claim and the prior art reference is that the disputed claim is applicable to the sewage testing field, and the reference is applied in the field of groundwater testing. The patentee's assertion shall be analyzed from two aspects: one is whether the use feature is recited in the claim, and the other is whether it, if recited, has a limiting effect. Since nothing related to the usage environment is literally recited in the claim, there is no need to discuss it any further. To say the least, even if the disputed claim defines that the device is only used for sewage testing, and the reference is only used for groundwater testing, said feature does not necessarily have a limiting effect. Although the patentee stated in the hearing that different fields of use would cause the differences in technical solutions, the differences are only related to how to use the product, rather than the structure of the product itself. Therefore, even if a related feature was recited in the claim, it cannot delimit the claim.<sup>7</sup>

The following example relates to a container comprising a drug composition, which claims "1. An article of manufacture, comprising (1) a container, (2) a composition within the container comprising an anti-ErbB2 antibody that binds to epitope 4D5 within the ErbB2 extracellular domain sequence, (3) a label on or associated with the container that indicates that said composition can be used for treating a breast cancer characterized by overexpression of ErbB2 receptor, and (4) a package insert containing instructions to avoid the use of anthracycline - type chemotherapeutics in combination with said composition".

Said claim is a product claim (comprising a container, a composition, a label and a package insert), which, however, involves limitations by the feature of use and the feature of contraindication, wherein the feature of use is "a label ..... that indicates that said composition can be used for treating a breast cancer characterized by overexpression of ErbB2 receptor", and the feature of contraindication is "a package insert containing instructions to avoid the use of anthracycline - type chemotherapeutics in combination with said composition". Whether the feature of use or the feature of contraindication has a limiting effect depends on

whether and how it defines the claimed product itself. The feature of use describes the objective effect of the composition, whereas the feature of contraindication intends to inform patients of doctors' instructions. None of the above features substantially affect the structure or composition of the product, and therefore should not be considered in the determination of the scope of protection of the claim.

#### (5) Limitation by installation method features

Whether such kind of features has a limiting effect also depends on whether they delimit the subject matter, and there is no one-size-fits-all approach. Objectively speaking, in some product claims, limitations by installation methods affect the structure or material of products.

This example relates to an LED clean keel lamp, which claims "1. An embedded LED clean keel lamp installed on a keel (1) with a groove, characterized in that it comprises a light bar (2), a driving power supply (3), and a power cord (4) connecting the light bar (2) and the driving power supply (3), the light bar (2) including a light source assembly (2-1) and a light-transmitting cover (2-2), the light source assembly (2-1) is installed within the light-transmitting cover (2-2), the light-transmitting cover (2-2) includes a cover body (2-22) and two lead bars (2-21) for clamping the groove of the keel (1), and the cover body (2-22) and the lead bars (2-21) are integrally formed".

The patentee asserted that the lead bars in claim 1 are defined as "two lead bars (2-21) for clamping the groove of the keel (1)", in which the word "clamping" shall be understood as a bottom-up installation approach. Thus, the lead bars for clamping are elastically deformable. The patentee's argument was not accepted as the installation method is not recited in the claim. However, suppose "clamping" is amended to "clamping from bottom to top", the outcome may be different. If the lead bars are made of a rigid material, it is unlikely to install and fix them from bottom to top, and only with elastic deformation can the bottom-up installation and fixation by clamping be realized, and thus, the lead bars can be construed as being made of an elastic material.

#### (6) Limitation by preparing method features

In addition, the product claims may also include preparing method features. If the preparing method has an impact on the structure and the like of the product, it has a limiting effect; or otherwise, it cannot delimit the claim.

This example relates to a table tennis racket, which claims "a table tennis racket comprising a handle, a bottom plate and an elastic panel on the bottom plate, character-

ized in that: the handle and the bottom plate are made of a plastic material and glass fiber through injection molding, and the elastic panel and the bottom plate are fixedly connected together by means of injection molding, the surface of the handle is provided with a slip-proof layer made of natural rubber, artificial rubber, silicone or plastic granules by means of injection molding”.

In said claim, preparing method is used to define that the handle and the bottom plate are made of a plastic material and glass fiber through “injection molding”, and the elastic panel and the bottom plate are fixedly connected together by means of “injection molding”. The preparing method dictates to a certain extent the specific structure of the table tennis racket. For example, it can be at least determined therefrom that the handle and the bottom plate, as well as the elastic panel and the bottom plate, are directly jointed together without any other materials such as adhesive. Hence, the preparing method has a limiting effect.

In this case, the reference also involves features defined by a preparing method, which is different from the one of the patent in suit though. It should be noted that what should be compared is not the two preparing methods, but the resulting products. That is to say, the difference in the preparing method does not automatically qualify it as a distinguishing feature. In this case, the reference discloses compression molding. If the difference between compression molding in the reference and injection molding in the patent in suit does not lead to any differences between the solutions in terms of structure, composition and the like, the technical feature of injection molding does not constitute a distinguishing feature, or otherwise, it does.

#### (7) Limitation by dosage features

In pharmaceutical use claims, limitation by dosage is common. However, a currently prevailing view is that dosage does not have a limiting effect because it is closely associated with a doctor’s treatment scheme and not directly or definitely linked to the pharmaceutical process.

The pharmaceutical use claim is a special way of claim drafting. Although it is drafted as “use……for manufacturing a medicament for ……”, said use is concerned with the effect of the drug on a patient’s body during use and not associated with the pharmaceutical process. Thus, whether the dosage feature is limiting does not depend on whether it directly and necessarily defines the pharmaceutical process, but depends on whether it is associated with the use of the medication during administration.

This example involves pharmaceutical use claims as follows:

“1. Use of ranolazine for preparing a drug for reducing or preventing metastatic behaviour of cancer cells in voltage gated sodium channel (VGSC) expressing cancer by the effect of at least reducing the persistent part of the VGSC current without eliminating the transient part, wherein the dosage of ranolazine has said effect in the cancer cells in VGSC expressing cancer without killing the cancer cells.

6. The use according to any of claims 1 to 3, wherein the ranolazine contained in the drug is administered in a dosage level corresponding to the range 1  $\mu\text{mol/l}$  to 10  $\mu\text{mol/l}$ .

7. The use according to claim 4, wherein the ranolazine contained in the drug is administered in a dosage level corresponding to the range 1  $\mu\text{mol/l}$  to 10  $\mu\text{mol/l}$ .”

In this case, claim 1 recites the dosage of ranolazine, and the Invalidation Decision concluded that the dosage is not a limiting feature. However, the court held that the drug administration inevitably involves dosage and the technical effect is generally associated with the dosage, so the dosage in the disputed claim 1 has a limiting effect. The dosage had been taken into account during the evaluation of inventive step of claim 1 in the Invalidation Decision, though not identified as a distinguishing technical feature. In addition, claims 6 to 8 are also defined by dosage, which were considered in the Invalidation Decision.<sup>8</sup>

(To be continued)

The author: Beijing Intellectual Property Court

<sup>1</sup> The Administrative Judgment No. Jing73xingchu 966/2017.

<sup>2</sup> The Administrative Judgment No. Jing73xingchu 8053/2019.

<sup>3</sup> The Administrative Judgment No. Jing73xingchu 10623/2020.

<sup>4</sup> The Administrative Judgment No. Jing73xingchu 10670/2019.

<sup>5</sup> The Administrative Judgment No. Jing73xingchu 2152/2018.

<sup>6</sup> The Administrative Judgment No. Jing73xingchu 1109/2019.

<sup>7</sup> The Administrative Judgment No. Jing73xingchu 5094/2019.

<sup>8</sup> See *supra* note 4.