Consideration and Judicial Review of Inventive Concept in Inventive Step Assessment

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I. Introduction

Over recent years, China has put forward definite requirements for strengthening the legal protection of intellectual property rights, in a bid to "form a basic system in support of comprehensive innovation" and protect innovation in a comprehensive, complete and accurate manner. Completely and accurately identifying the "inventive step" of an invention is a requisite for protecting innovations. Assessment of inventive step, as a critical benchmark for evaluating technological innovations, is vital and difficult in examination of administrative patent disputes. If the criteria for inventive step are too lenient, the assessment of inventive step is imbalanced; or otherwise, the protection for innovations is insufficient. Inventive concept serves as the important starting point and necessary cornerstone for an invention and connects such elements as technical problem, technical features and teaching, and its significance in patent prosecution and invalidation is unignorable. However, in judicial practice, different courts differ widely in the determination of the role of inventive concept in the examination of inventive step. Therefore, by taking *Oerlikon Textile GmbH & Co. KG and China National Intellectual Property Administration (CNIPA) v. Zhejiang Yuejian Intelligent Equipment Co., Ltd.* (an administrative dispute over invalidation of an invention patent) [1], this article intends to delve into the role of the inventive concept in the examination of inventive step, and probe into the connotation of inventive step assessment based on the policy of "support of comprehensive innovation", so as to further clarify the judicial application rules of inventive concept in inventive step assessment.

II. Case brief

Oerlikon is the patentee of an invention patent No. 200810175661.2 (hereinafter referred to as the present patent) with a title of "False Twisting Texturing Machine". Claim 1 of the present patent reads "a false twisting texturing machine for texturing a plurality of multifilament yarns, comprising a plurality of conveying mechanisms …… the first conveying mechanism and the second conveying mechanism are each formed as a winding conveying mechanism, and the third conveying mechanism is formed as a clamping conveying mechanism". Yuejian filed a request for declaring the present patent invalid, stating that the prior art discloses two technical solutions, namely, three conveying mechanisms are all winding conveying mechanisms or clamping conveying mechanisms, such that those ordinarily skilled in the art can readily replace one or more winding conveying mechanisms with clamping conveying mechanism(s).

In regard to the request for invalidation submitted by Yuejian, the CNIPA made the Invalidation Decision No. 32984 (hereinafter referred to as the sued Decision) on 1 August 2017, holding that the inventive concept and substantial contribution of the present patent lie in the use of different types of conveying mechanisms working in cooperation, the overall combination of the different types of conveying mechanisms working in cooperation shall be taken as the distinguishing technical feature to determine the inventive step of the patent, and the prior art does not provide any teaching for the combined use of the different types of conveying mechanisms. For the above reasons, the present patent was found inventive and declared valid.

Being unsatisfied with the CNIPA's decision, Yuejian brought an appeal to the Beijing Intellectual Property Court. The Beijing Intellectual Property Court ordered the CNIPA to re-issue a decision on the grounds that the inventive con-

cept does not affect the determination of the distinguishing technical feature, the three conveying mechanisms of the present patent should not be compared as a whole, and the distinguishing technical feature of the present patent over the prior art only lies in the simple combined replacement of the clamping conveying mechanisms or winding conveying mechanisms and such a replacement does not involve any inventive step.

Oerlikon and the CNIPA were not satisfied with the first-instance judgment and decided to appeal to the Supreme People's Court respectively, claiming that the first-instance court erred in finding the distinguishing technical feature of the present patent over the prior art and assessing the inventive step. After trial, the Supreme People's Court held that:

(1) Determination of the distinguishing technical feature. In the judgment of the distinguishing technical feature of the claimed invention over the closest prior art, effort shall be made to determine the technical difference between the invention and the closest prior art, starting from the inventive concept of the invention. If the inventive concept of the invention lies in the combination of the corresponding technical means and the prior art discloses neither the teaching for such combination explicitly or implicitly nor the technical effect resulting from such combination, the combination of these technical means protected by the invention should be treated as a whole when determining the distinguishing technical feature, and it is inappropriate to use a single technical means among them as the basic element in the determination of the distinguishing technical feature. The yarn conveying devices disclosed in the prior art are all composed of a single type of conveying mechanisms in combination. The prior art provides no teaching for a feeding device composed of different types of conveying mechanisms in combination, and does not disclose the technical effect brought by the different types of conveying mechanisms in combination. As a result, in the determination of the distinguishing technical feature of the present patent over the closest prior art, the different types of conveying mechanisms in combination in the present patent shall be regarded as a whole.

(2) On whether the present patent involves an inventive step. The technical problem solved by the present patent is to make the yarn less damaged at the front end and keep the tension constant at the rear end for the sake of easy change of reels. In the prior art, the technical problem of keeping the tension of yarns constant has been solved by additionally disposing a pneumatic conveying device, but no teaching for the combination or the technical effect brought by the combination is provided. Based on the prior art, those skilled in the art have no motivation to improve or employ the technical solution regarding the combined conveying mechanisms. The present patent achieves the technical effect of "guiding the yarn undamaged to the post-processing zone, keeping the yarn tension constant in the post-processing area, and rendering the yarn not relaxed during the change of reels in the winding device" by means of combining different types of conveying mechanisms, i.e., configuring the first and second conveying mechanisms as a winding conveying mechanism and the third conveying mechanism as a clamping conveying mechanism. Hence, the present patent possesses an inventive step over the combination of prior art references.

III. Difficulties in inventive step assessment arising from inventive concept

According to the CNIPA's interpretation, inventive concept refers to "a technical improvement thought proposed by an inventor in the process of seeking a solution to the technical problem during the completion of the invention".[2] No provisions on how to apply inventive concepts in inventive step assessment are clearly stipulated in the Patent Law, the Implementing Regulations of the Patent Law, or the Guidelines for Patent Examination. In practice, inventions that make innovative contributions mainly based on inventive concepts are not uncommon. As a result, difficulties in inventive step assessment arise in the examination of administrative patent disputes.

(1) Divergences in the determination of inventive concept

Fully understanding and applying inventive concepts is an important aspect to ensure that the examination on inventive step returns to the essence of inventions and to accurately evaluate the contributions made by inventions. However, there is no direct legal provision on how to determine inventive concepts in inventive step assessment. Article 31 of the Patent Law reads "two or more inventions or utility models belonging to a single general inventive concept may be filed as one application", which clarifies the

role of inventive concepts from the perspective of divisional applications. In addition to the detailed provisions on divisional applications, the Guidelines for Patent Examination sets clear requirements for focusing on the inventive concept, rather than pure literal meaning, in the search of independent claims. [3] The Patent Law, the Implementing Regulations of the Patent Law and the Guidelines for Patent Examination make no definite provisions on how to understand and apply the inventive concept in inventive step assessment.

Though having no specific legal support, the inventive concept has made an important technical contribution to the completion of the invention. As interpreted by the CNIPA, "an inventive concept is crucial to the completion of invention, and the contribution made by the invention to the prior art is embodied in not only the selected technical means, but also the proposed technical concept". [4] In the absence of explicit provisions, it is not difficult to understand that there exist divided views on whether the inventive concept can be taken as the basis for inventive step assessment. For instance, if the technical contribution of the patent in the present case is mainly reflected in the inventive concept, the key issue is to clarify whether the inventive step of the patent can be determined pursuant to the inventive concept.

(2) Dilemma about inventive step assessment without taking inventive concept into account

Bearing inventive concepts in mind, inventors apply new technical solutions or technical combinations to solve technical problems that were difficult to resolve in the past on the basis of the prior art. Understanding a technical solution without taking the inventive concept into account can easily result in superficial and fragmented examination, such that the invention may be regarded as the simple superposition of multiple existing technologies. Consequently, the inventive step of the invention may be underestimated or "hindsight" may emerge.

Take the above case for example. The first-instance court deemed that although the right holder emphasized that two combinations of conveying mechanisms defined in claim 1 generate two advantageous effects, i.e., to make the yarn less damaged at the front end and meanwhile keep the tension constant at the rear end for the sake of easy change of reels, the above effects are merely the superposition of the effects of different combinations, and the inventive concept cannot be determined as the distinguishing technical feature or serve as the basis for inventive step assessment.

However, over-division of technical features and ignorance of the role of inventive concepts may lead to overly fragmented identification of technical features and render the contribution of the inventive concept be overlooked. The contribution of one invention may not only come from the inventive concept of the combined technical elements, but also be embodied in the technical elements *per se*. In essence, the vast majority of inventions are made by means of combining the elements in the prior art. If the inventive step of the combined elements is not considered at all, the inventive step of such inventions may be readily denied, such that the great majority of inventions cannot pass the inventive step examination. [5] The specialty of this case is that the technical contribution is mainly embodied in the inventive concept. If the inventive concept is not taken into consideration in the inventive step assessment, the result-oriented hindsight improperly elevates the requirements for examination of inventive step of a technology. For that reason, the denial of the contribution made by the inventive concept to the combination of the prior art elements is not in line with the intellectual property policy of "support of comprehensive innovation".

IV. Inventive step assessment in support of comprehensive innovation

Innovation is the first driving force for development, and to protect intellectual property rights is to protect innovations. Inventive step assessment is a legal tool to determine the strength of innovation protection, and an institutional weapon to implement and enforce the "cultivation of new quality productive forces" and the "support of comprehensive innovation". By strengthening the protection of intellectual property rights, it means that effort shall be made to strictly protect property rights and encourage technological innovation, and meanwhile take the public interest into account and prevent excessive technological monopoly. Over-high criteria for inventive step improperly raise the patentability threshold and are not conducive to incentivizing technical innovation. Over-low criteria for inventive step impose more burden on the society and are adverse to the public interest. To this end, it is quite necessary to accurately analyze the connotation of "support of comprehensive innovation" and the institutional requirements of inventive step as-

sessment.

(1) Connotation of the policy of "support of comprehensive innovation"

Innovation is a systematic project that covers a wide range of fields, involves various aspects and is difficult to create. It is of necessity to establish a legal institutional system in support of comprehensive innovation. Comprehensive innovation is centered on scientific and technological innovation, including original and subversive innovation, and cumulative and transformative innovation. As for a legal system in support of comprehensive innovation, comprehensive consideration shall be given to the scientific, technological, economic and social values of innovation elements, [6] and a full-chain, multi-level and holistic institutional support shall be provided for innovation.

President Xi Jinping highlighted that "scientific and technological innovation can incentivize new industries, new models and new momentum and is the kernel factor to develop new quality productive forces", and "work must be done to strengthen scientific and technological innovation, in particular original and subversive scientific and technological innovation". According to the research on the innovation performance of Tu Youyou, a Nobel winner, by Chinese scholars, original innovation is not discontinuous and abrupt, but results from constant accumulation and evolution of cumulative innovation, as well as continuous superposition of small innovation changes. [7] Some scholars also stated after research that innovation performance has a distinct cumulative effect, and laws, policies and humanistic environment will provide basic guarantee and support for innovation accumulation and output. [8] It can be seen that original and subversive innovation is not accomplished in one fell swoop, and supporting cumulative innovation and improving inventions at the institutional level can offer institutional support and guarantee for the accumulation of original innovations.

(2) Requirements for inventive step assessment in support of comprehensive innovation

Inventive step examination is a legal judging mechanism, and it is necessary to review the inventive step elements from the perspective of comprehensive innovation. There are three reasons for comprehensively examining the inventive step of a technology from the viewpoint of inventive concept:

First, ensure that innovation is comprehensively examined and protected. For the sake of supporting comprehensive innovation, in addition to original and subversive innovation, cumulative innovation such as improvement of inventions shall also be provided with property right incentive and institutional support in such a way to constantly promote the continuous superposition of small innovations, boost the transformation and upgrading of technological innovation and cultivate and develop new quality productive forces. This requires that the inventive step assessment should be made within a reasonable boundary, avoiding both overestimation, which renders it hard to protect cumulative innovations and improve inventions, and underestimation, which leads to insufficiency of high-quality patents and impossibility to develop new quality productive forces vigorously.

Second, utilize holistic thinking in inventive step assessment. Inventive step assessment neither is a simple matter of comparison of divided technical features, nor involves the separate comparison of technical features as used in novelty assessment. Instead, it is a judgment on whether an invention is obvious over the prior art by employing holistic thinking reflected in the "three-step method". As clearly recited in the Guidelines for Patent Examination, "when evaluating whether or not an invention involves an inventive step, the examiner shall consider not only the technical solution itself, but also the technical field to which the invention pertains, the technical problem solved, and the technical effects produced by the invention. The invention shall be considered as a whole." [9] The inventive concept is a holistic depiction of the technological creation, linking up the technical field, technical solution, technical problem and technical effects. [10] Hence, some examiners stated that understanding the patent application and the prior art based on the inventive concept can better dig out the essence of the invention as a whole and more accurately judge whether a technology is "non-obvious". [11]

Third, reduce subjective bias in inventive step assessment. Judging an inventive step based on the inventive concept can guarantee the accuracy of inventive step assessment, and avoid "cognitive bias" and "hindsight" in examination. In the present case, with the wisdom of hindsight, the prior art provides the solution comprising two conveying mechanisms, namely a winding conveying mechanism and a clamping conveying mechanism. The combination of these conveying mechanisms seems obvious. However, by means of additionally arranging a pneumatic conveying device, the prior art has solved the technical problems of yarn

damage and constant tension maintenance for easy reel change. There is no teaching for combining different types of conveying mechanisms to solve the above technical problems or for the technical effects brought by such combination. Consequently, "hindsight" easily occurs if the inventive concept is ignored.

V. Role of inventive concept in inventive step assessment

The "three-step method" is adopted in China to examine the inventive step of patents; however, the judgment on subjective elements in the "three-step method" is at the risk of "hindsight". Under the guidance of inventive concept, the integrity, objectivity and comprehensiveness of the inventive step assessment can be strengthened, which is of great assistance in determining such elements as the distinguishing technical feature or non-obviousness by the "three-step method".

(1) Legal mechanism for inventive step assessment

The "three-step method" for inventive step assessment includes: first, determining the prior art that is closest to the claimed invention; second, determining the distinguishing technical feature of the invention and the technical problem actually solved by the invention; and third, determining whether or not the claimed invention is obvious to those skilled in the art. [12] The "three-step method" is essentially a process of restoring the invention according to the knowledge and from the perspective of those skilled in the art, which means those skilled in the art shall analyze the technical defects in the closest prior art prior to the filing date, propose the technical problem actually solved by the invention based on the above analysis, and further decide whether the prior art as a whole provides any teaching for solving the technical problem of the invention by using the same technical means. [13]

The "three-step method" is hierarchically structured with the steps tightly interconnected . It is highly practical and operable in examination practice and can be applied to the majority of patent applications. However, the determination of distinguishing technical features and non-obviousness in the "three-step method" involves subjective judgment, which may easily lead to hindsight and subjective bias in complex cases. Thus, the subjective determination of inventive step may be seriously deviated from the innovative level of technology, which is not conducive to the effective enforcement of the intellectual property policy of "support of comprehensive innovation".

(2) Application of inventive concept in the determination of distinguishing technical feature

When determining the distinguishing technical feature, one shall fully understand the concept of the invention, i.e., the background art of the invention, the main technical problem solved, the technical means used and the technical effect to be achieved. If the invention solves the technical problem by means of the concept of combining different technical means and achieves a desirable technical effect and the prior art provides no inspiration for such a combination or no teaching for the solution of a corresponding problem, the inventive concept of such a technical combination shall also be taken into account in the determination of the distinguishing technical feature.

In the first instance of this case, a single technical means was regarded as the basic element in the determination of the distinguishing technical feature. Following the above analytical method, the court of second instance placed emphasis on the inventive concept of combination of technical means when determining the distinguishing technical feature for the following three reasons:

First, the description of the present patent explicitly recites the inventive concept and the technical effect of the invention, that is, two different types of conveying mechanisms (namely, the winding conveying mechanism and the clamping conveying mechanism) are combined to accomplish the high-quality transformation and processing of yarns. Second, the prior art provides no technical inspiration or teaching. The yarn conveying devices disclosed in the prior art are all made of a single type of conveying mechanism without exception, and the prior art neither teaches a feeding device configured by combining different types of conveying mechanisms nor discloses any technical effect achieved by the combination of different types of conveying mechanisms. Third, the common knowledge evidence also demonstrates that creative labor is a must to optimize the technical effect.

In summary, the distinguishing technical features of the present patent over the prior art determined on the basis of the inventive concept are as follows: the first conveying mechanism and the second conveying mechanism respectively constitute a winding conveying mechanism; and the third conveying mechanism constitutes a clamping conveying mechanism. The distinguishing technical features are

determined in full consideration of the inventive concept of the present patent, acknowledging the creative contributions made by the inventive concept.

(3) Application of inventive concept in the non-obviousness judgment

The inventive concept is conducive to judging whether the present patent is obvious with respect to the prior art from the perspective of holistic thinking. As clearly indicated in the Guidelines for Patent Examination, in the "non-obviousness" judgment, it shall be determined whether the prior art holistically provides any teaching, "the invention must be taken as a whole", and the inventive concept must be taken into account in the non-obviousness examination. [14]

Based on holistic thinking and according to the Guidelines for Patent Examination, in order to determine whether the combination of inventive concepts is non-obvious, it is required to examine whether the technical features of the combined inventive concepts support each other functionally, whether the technical effect of the combined inventive concepts has achieved a new technical effect [15] or whether the combined inventive concepts which are different from the prior art can be substantially tantamount to the prior art. [16]

In the present case, the present patent combines the two different types of conveying mechanisms, namely the winding conveying mechanism and the clamping conveying mechanism, to form a new yarn conveying mechanism in order to achieve the high-quality transformation and processing of yarns. The three technical features are in a close cooperating relationship and should be regarded as a holistic combination of functionally-supportive technical features. The technical problem solved by the present patent is to keep the yarn tension constant. To this end, the prior art additionally arranges a pneumatic conveying device to solve said technical problem without any teaching for such combination or the technical effect brought thereby, such that those skilled in the art have no motivation to make improvement or adopt other technical solution. Hence, the present patent is non-obvious with respect to the prior art and involves an inventive step.

All in all, for technical features which functionally support and interact with one another, one should consider the inventive concept of combining the technical features as a whole, and delve into the relationship between the technical features and the inventive concept, as well as the technical effect achieved by the claimed invention. If those skilled in the art need to make creative labor to combine the distinguishing technical feature with the closest prior art to the claimed technical solution, the fact that each technical feature of the invention has been respectively disclosed in the prior art or pertains to common knowledge does not suffice to determine that the prior art or common knowledge has taught the combination of the distinguishing technical feature with the closest prior art to form the claimed technical solution.

The protection of intellectual property rights should be "fair and reasonable". [17] The scope of protection of a patent shall match up with the technical contributions it makes. "Genuine innovations" should be "truly protected" and "high-quality inventions" should be "strictly protected". [18] Establishing appropriate criteria for assessing inventive step of technological innovations centered on inventive concepts is a necessary requirement for enforcing the intellectual property policy of support of comprehensive innovation and for respecting the value of intellectual property incentives and the balance of interests. Inventive concept is a crucial step in technological creation, and meanwhile a legal kernel in inventive step assessment. Clarifying the role of inventive concept in inventive step assessment and more accurately identifying the distinguishing technical feature and non-obviousness can reduce the hindsight and subjective bias in inventive step assessment and ensure the comprehensive protection of technical contributions made by innovation-driven development. ■

The author: Judge of the Third Civil Division of the Supreme People's Court

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[1] See the Administrative Judgment No. Jing73xingchu 787/2018 and the Administrative Judgment No. Zuigaofazhixingzhong 279/2020.

[2] The Patent Reexamination Board of the CNIPA (2018). *Case Briefs: Guidance for Typical Patent Reexamination and Invalidation Cases* (p. 183). The Intellectual Property Publishing House.

[3] Part II, Chapter Seven, Section 3.2 "Seach on an Independent Claim" of the Guidelines for Patent Examination. CNIPA (2010). *The Guidelines for Patent Examination (2010)* (p. 204). The Intellectual Property Publishing House.

[4] See supra note 2.

[5] Cui Guobin. *Principles and Cases of the Patent Law* (2nd edition, p. 278). The Peking University Press.

[6] Qiao Lili, Liu Zhongquan and Ren Zhipeng. Theoretical practice and

logical framework of basic systems in support of comprehensive innovation. *Science Research Management*. First posted on line on 7 February 2024.

[7] Su Yi, Lin Zhouzhou, Lixin and Lei Jiasu (2016). Accumulation of small changes: Creation of original innovative achievements—Taking the Novel Prize of Tu Youyou for example. *Science & Technology Progress and Policy, 23, 2-3*.

[8] Zhao Yulin and Hu Yan (2018). The cumulative effect of high-tech industry's innovation performance: An empirical analysis based on phases and lags. *Forum on Science and Technology in China, 10, 103-104*.

[9] Part II, Chapter Four, Section 3.1 "Principles of Examination" of the Guidelines for Patent Examination. CNIPA (2010). *The Guidelines for Patent Examination (2010)* (p. 171). The Intellectual Property Publishing House.

[10] Huang Guoqun and Zhu Ranran (2023). Discussion on the allocation of the burden of proof of patent examination. *Science Technology and Law, 6, 59*.

[11] Fei Zhuling and Hou Bingping (2019). Discussion on the judgment of inventive step based on invention concept in patent examination. *China Invention & Patent, 8, 102*.

[12] Part II, Chapter Four, Section 3.2.1.1 "Approach to Assessment" of the Guidelines for Patent Examination. CNIPA (2010). *The Guidelines for Patent Examination (2010)* (p. 172). The Intellectual Property Publishing House.

[13] Xu Hui and Feng Xiaona (2020). Consideration of technical problems actually solved by inventions in inventive step examination. *Henan Science and Technology, 3, 78*.

[14] See supra note 11.

[15] Part II, Chapter Four, Section 4.2 "Invention by Combination (2) Non-Obvious Combination" of the Guidelines for Patent Examination. CNIPA (2010). *The Guidelines for Patent Examination (2010)* (p. 177). The Intellectual Property Publishing House.

[16] Part II, Chapter Four, Section 3.2.2 "Assessment of Notable Progress" of the Guidelines for Patent Examination. CNIPA (2010). *The Guidelines for Patent Examination (2010)* (p. 175). The Intellectual Property Publishing House.

[17] Xi Jinping (2021). Comprehensively strengthening the protection of intellectual property rights, stimulating innovative vitality and promoting the construction of a new development pattern. *Qiushi, 3*.

[18] Interview with Tao Kaiyuan, vice president of the Supreme People's Court: Judicial protection of high-quality economic and social development with high-quality intellectual property rights. Retrieved from http://lianghui.people.com.cn/2024/n1/2024/0309/c458609-40192451.html. Last visit on 10 March 2024.

China's Inventory of Valid Invention Patents Soars to 4.425 Million by June 2024

By June 2024, China's inventory of valid invention patents had soared to 4.425 million, with corporate ownership accounting for 72.8%, reflecting an upsurge in business innovation. The number of foreign-owned valid invention patents and registered trademarks in China had reached 919,000 and 2.135 million respectively, showing a consistent upward trend. In the first half of 2024, patent transfers and licensing transactions by Chinese universities and research institutions increased by 22.2% year on year. Recently, the State Council Information Office of China held a series of press conferences themed *Promoting High-Quality Development*, highlighting the remarkable progress in the intellectual property (IP) sector.

Shen Changyu, Commissioner of the China National Intellectual Property Administration (CNIPA), outlined the administration's strategic focus on three key areas to deepen IP reform and create an efficient integrated IP management system at the press conference. The first priority is to enhance the integrated management reform to spur innovation more effectively. The second is to refine the reform to better encourage high-level opening-up. The third is to advance the reform to support the development of a high-standard market system.

Data has transcended the traditional forms of production factors to emerge as a premium element in the creation of new quality productive forces. Invention patent licensing transactions in the core industries of China's digital economy reached 406,000, representing 45% of the total, with an average annual growth rate of 21.0% over the past five years.

Source: China IP News