Study on the Intellectual Property Risks of Sichuan-Tibet Railway Going Global

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Abstract

Studying the intellectual property risks of Sichuan-Tibet Railway's "going global" is an inevitable choice to respond to economic globalization and China's "going global" strategy. This paper takes legal environment and overseas patent layout as the starting point, and analyzes the market access environment and patent layout of target countries, and concludes that Sichuan-Tibet Railway is prone to encounter technical barriers and patent siege of other countries in the process of "going global". On the basis of the above research, this paper puts forward IPR suggestions such as formulating patent layout strategies according to local conditions.

Keywords

Sichuan-Tibet Railway; Going Global; Overseas Patent Layout.

1. Introduction

As a strategic project involving national unity and national solidarity, the Sichuan-Tibet Railway is a miracle of human engineering and needs to overcome many technical difficulties, so it is of practical significance to study the intellectual property risks of the "going global" of the Sichuan-Tibet Railway.

The connotation of "going global" of Sichuan-Tibet Railway is mainly expressed in the output of products and equipments, technology patents and complete vehicles. This paper mainly discusses the possible intellectual property risks faced by Sichuan-Tibet Railway in the process of output of products and equipments and technology patents, and tries to provide solutions for them.

2. Organization of the textIntellectual property risks arising from differences in the legal environment

2.1 Technical barriers and market access risks

In the context of economic globalization and increasingly fierce competition among countries, in order to protect their own markets, they will take various measures to resist the entry of foreign products into their domestic markets and the common practice is to set up technical barriers to trade and raise the market access threshold in order to achieve the effect of keeping other countries' technologies out. The "going global" of Sichuan-Tibet Railway means that the technology of Sichuan-Tibet Railway needs to enter the market of other countries which also faces the risks of technical barriers and market access. Therefore, it is necessary to understand the market access standards and related technical barriers of the main target countries for the export of Sichuan-Tibet Railway technologies.

Take Europe and the United States as an example: the EU region has established a set of clear and mutually supportive railway technical specification systems in the railway field in order to achieve interoperable operation of European railways. The United States urban rail transit system provides for material technology standards, welding standards, vehicle design standards, vehicle fire standards and electrical standards.

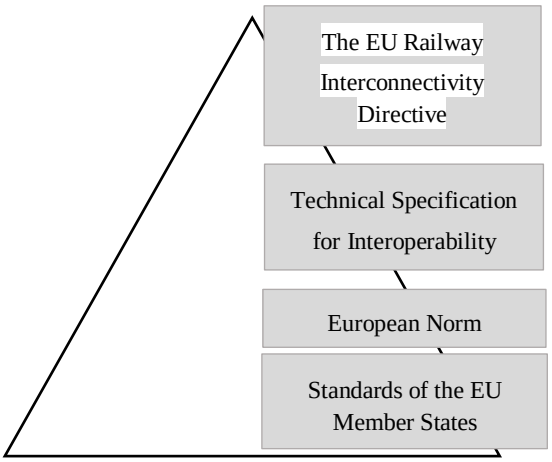

Fig. 1 Hierarchy of technical specifications for EU rail interconnection

To enter the European market, Sichuan-Tibet Railway technology must meet European standards and enter the European market, and all technical equipment needs to be certified by Europe. Take railway turnout products as an example, a turnout manufacturer in China, whose products have been certified by the former Quality Inspection Center of the Ministry of Railways, proving product safety and reliable performance. But to enter the European market, it needs to obtain European certification, which costs at least 6 million yuan in certification fees. Then in accordance with the European technical standard moulds, production equipment specifications, processes, technical specifications and other transformation of Sichuan-Tibet Railway technology products, the capital investment is even greater. China Railway Construction of Turkey "Ankara - Istanbul" railway project for example, the project is only 158 kilometers long, but from the 2005 bid to July 2014 officially opened to traffic, before and after a total of more than 8 years, and complex European standards. The lack of international technical standards for China's railways and the monopoly of European and United States standards in the international market inevitably lead to access restrictions on the export of Sichuan-Tibet Railway technology and products.

Then take the track system as an example, the track system is divided into standard gauge, wide gauge, narrow gauge, the Sichuan-Tibet Railway uses the Chinese standard gauge 1435mm; Russia, Kazakhstan, Mongolia and other countries use 1520mm wide gauge; India, Pakistan and other countries use 1676mm wide gauge; Africa Ghana, Congo, Tanzania, Zambia and other countries use 1067mm narrow gauge; Guinea The narrow gauge of 1000mm is used in countries such as Ghana; Congo, Tanzania, Zambia, Guinea, Ethiopia and Cameroon. The export of Sichuan-Tibet Railway technology to countries along the "Belt and Road" must take into account the differences in gauge, and the differences in gauge lead to the replacement of a series of products such as screws, etc. Therefore, it is necessary to conduct a detailed search of the technical standards of the exporting countries and make corresponding adjustments to the different standards of different countries.

2.2 Risk of legal application

The intellectual property rights risks that the corresponding technology or product of the Sichuan-Tibet Railway may face after entering the market of other countries include infringement of intellectual property rights of other countries and infringement of the patent of Sichuan-Tibet Railway's own technology. In practice, the risk of infringement on intellectual property rights of other countries is more prominent. Once the relevant subjects in other countries sue Sichuan-Tibet Railway for technical or property rights infringement, they will face the problem of application of intellectual property laws. In the event of IPR infringement litigation with other countries, the application of IPR law should take into account the following aspects: first, international treaties on IPR protection to which both parties are parties, second, bilateral treaties on IPR concluded jointly. third, the domestic laws on IPR of both countries.

Taking Japan as an example, if a Sichuan-Tibet Railway technology or product, after entering the Japanese market, is sued by a Japanese enterprise for infringement of intellectual property rights, the path of legal application is as follows: (1) Japanese courts will first apply the relevant provisions in the international treaties jointly concluded or participated by Japan and China; (2) if there are no relevant provisions in the international treaties jointly concluded or participated by China and Japan, Japanese courts will apply the domestic intellectual property laws of Japan ; (3) if there is also no relevant provision in Japan's domestic intellectual property law, the Japanese courts will apply it by reference to international practice or in accordance with the principle of reciprocity between Japan and China.

In this process, the technical subject of the Sichuan-Tibet Railway may invoke the wrong laws and regulations in the litigation process due to the lack of understanding of the applicable legal rank or the lack of knowledge of the international intellectual property conventions to which China and Japan are parties, and the relevant provisions of Japanese intellectual property rights. The legal consequences of incorrectly invoking the law may include: (1) failure to apply the provisions that should be beneficial to you, resulting in a disadvantageous litigation position; (2) inappropriate litigation strategy, resulting in a low chance of winning the case. Therefore, it is particularly important to know the legal information of the international IPR conventions to which the target country is a party and the bilateral agreements signed by China.

Table 1. International Conventions to which Japan is a party

Serial number	International conventions/treaties to which it is a party	Date of entry into force for Japan
1	Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) (1994)	1 January 1995
2	Convention Establishing the World Intellectual Property Organization (967)	20 April 1975
3	Paris Convention for the Protection of Industrial Property (1883)	15 July 1899
4	Berne Convention for the Protection of Literary and Artistic Works (1887)	15 July 1899
5	World Intellectual Property Organization Copyright Treaty (WCT) (2002)	6 March 2002
6	Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (1961)	26 October 1989
7	World Intellectual Property Organization Performances and Phonograms Treaty (WPPT)	9 October 2002
8	Patent Cooperation Treaty (PCT) (1970)	1 October 1978
9	Strasbourg Agreement on the International Patent Classification (1995)	Letter dated 14 March 2000 from the Permanent Representative of
10	Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks (1995)	Letter dated 14 March 2000 from the Permanent Representative of
11	Trademark Law Treaty (1996)	1 April 1997
12	International Plant Protection Convention (2005)	25 October 2005
13	Treaty on Biological Diversity (1993)	29 December 1993
14	International Convention for the Protection of New Varieties of Plants (UPOV) (1968)	3 September 1982

3. Intellectual property risks caused by the overseas patent layout

3.1 Being omitted the layout due to ignoring the focus of the patent application

Under normal circumstances, the railway industry in most countries will have their own special needs and industry priorities. Therefore, it is necessary to understand the key areas of the exporting country railway technology patent application in the process of "going global" in advance. This paper focuses on Russia, Serbia, Hungary and other countries along the "Belt and Road" and the EU and Japan, discussing the impact of the fields that railway patent application focuses on on the "going global" of Sichuan-Tibet railway from two perspectives. The following are the studies on railway patent applications in major target markets:

Table 2. Focus on railway technology patent applications in different countries

Target market	Areas where technology patent applications focus on	
	Level I technology	Secondary technology
Russia	bullet train technology Communication signal technology	Brake system, bogie Ground subsystem, interlocking subsystem, scheduling centralized CTC technology
Hungary	bullet train technology Communication signal technology	Steering ie, brake system and supporting technology Interlock subsystem and ground subsystem
Indonesia	bullet train technology Communication signal technology	Network control, bogie, and traction systems Ground systems and vehicle-mounted systems
The European Union	bullet train technology Communication signal technology Energy technology Control technology	Network control and train operation system, traction system, motor control technology
Japan	bullet train technology Energy technology Control technology	Network control and train operation system, traction system, motor control technology and new energy drive motor technology

As can be seen from the above table, in different export countries, China needs to focus on patent application fields are different countries. The technical field of Russian patent application is mainly concentrated on EMU and communication signal technology, EMU patent application is mainly concentrated on bogie, brake system and supporting technology; Hungarian patent applications are mainly concentrated on EMU technology and interlocking subsystem; and Indonesia prefers to apply for network control and bogie patents. Therefore, based on the patent demand of Russia pays attention to bogie, communication signal technology, Hungary focuses on interlock subsystem and ground subsystem patent application, Indonesia is keen on the current situation of network control and communication system, Sichuan-Tibet railway in the process of "going global" if you ignore the "Belt and Road" countries in the railway patent application will cause the loss of intellectual property layout.

Secondly, in areas where railway technology and intellectual property development like the EU and Japan are relatively perfect, if Sichuan-Tibet railway enterprises ignore the focus of technical patents in the local railway field when making overseas patent layout, it is very easy to cause an embarrassing situation of empty water. From the perspective of the EU and Japan, the focus is often on popular patents in the region or technical fields with blank research, while most other relatively cold fields have relatively stable patent layout or top technologies in the field have little room for innovation.

On the one hand, because the local market may prefer the technology, the excellent patents applicable to Sichuan-Tibet Railway cannot be implemented in this region; on the other hand, the due diligence of overseas patent layout may be difficult for Sichuan-Tibet enterprises to fix the patent research and development direction. Because the appetite to do its food is the basic law of overseas patent layout, with a target, to maximize the profit.

For a long time, because China's railway technology enterprises lack the experience of overseas patent layout, it is easy to ignore the patent application of different fields and lack of targeted patent application, which leads to loopholes in China's patent layout network.

3.2 Being easy to fall into rival patent traps

Although the number of technical achievements of Sichuan-Tibet railway output is large, enterprises often choose to fix them by means of technical secrets or tricks. When the remaining technologies are exported to overseas regions in the form of patents, if Sichuan and Tibetan enterprises do not carry out a global, coordinated and systematic overseas patent layout, they will fall into the trap of others' patent suppression and contribute their own market share.

Taking the patent of the railway body technology and brake device as an example, this paper downloaded the data from the Patsnap platform (an intelligence agent for technology companies, universities, research institutions, financial institutions) and retrieved the IPC classification group of the brake device, etc. The following is the layout of the railway enterprise on the patent:

Table 3. "IPC: (B61D)" patent attribution

Enterprise	Number of patent applications worldwide	Country or region is located	Number of patent applications in the country or region	Number of overseas patent applications	The proportion of overseas patents accounted for the total
CRRC	4746	China	4413	333	7%
Bombardy	231	Canada	7	224	97%
Siemens	3149	Europe	723	2426	77%
Alstom	1680	Europe	339	1341	79%

Data show that although the total number of CRRC patent applications is more than 4,700,4,400 are the number of domestic patent applications, and the layout is mainly concentrated in China, and the number of overseas patent applications only accounts for only 7% of the total number. In the same period, Siemens and Alstone accounted for 97% and 79% of the total overseas patent layout. In this way, when Sichuan-Tibet railway technology is exported to different countries, it is very difficult for Sichuan-Tibet enterprises to enter the local market to seize market share or to infringe other market rights, because other competitors have made prior patent applications in the country. Therefore, in the process of "going global", the Sichuan-Tibet Railway must always be vigilant against the patent layout "suppression net" woven by its competitors, so as not to fall into the trap.

Insufficient layout of overseas patents will lead to the increased risk of infringement. When exporting regions along the "Belt and Road" and major markets in Europe and American and other countries, various countries have different patent focus on fields and some risks of competitors to set up patent fishing nets. However, obviously China lacks attention and thinking in these intellectual property risks. In the process of "going global" of Sichuan-Tibet Railway, being alert to the risks of overseas patent layout, can effectively reduce the cost of technology and product export, and greatly improve the possibility of entering overseas markets.

Inadequate overseas patent layout will lead to higher risk of infringement. When exporting to the main markets along the "Belt and Road" as well as Europe and America, each country has different patent focus areas and the risk of patent fishing nets set by competitors in some areas, but obviously China lacks attention and consideration in these intellectual property risks. In the process of "going global" of Sichuan-Tibet Railway, we should be alert to the risk of overseas patent layout, which can effectively reduce the cost of technology and product export and greatly improve the possibility of entering overseas markets.

4. Response Strategy

The intellectual property risk response strategy of Sichuan-Tibet Railway going global.

(1) Understand the standard norms of export regions and intellectual property laws. As there are many potential market countries for Sichuan-Tibet Railway technology products, different countries have different standard requirements for various aspects of the railroad, and the legal regulations on transnational enterprise transactions and patent applications are also different. Some countries along the "Belt and Road" apply European standards and some apply American standards. In terms of patent application procedures, there are differences in the time from application to authorization, the duration of patent protection, and whether formal examination is conducted. In order to avoid the dilemma brought by unfamiliarity with local legal environment and customs after exporting Sichuan-Tibet Railway technology products, China's railroad enterprises should understand international conventions such as TRIPS in advance before exporting technology, thoroughly study the intellectual property laws of the target countries, interpret the relevant law article by article, and combine with technical analysis of intellectual property rights to find discretionary areas.

(2) Taking the initiative to file overseas patent applications. It is not difficult to find out through the data obtained from the patent search that the patent applications of railway-related enterprises in China are mainly concentrated in the domestic market, and whether it is the overall patent or a certain technology patent, it shows a serious situation of insufficient overseas patent layout. In the long run,

it will make Sichuan-Tibet Railway face the dilemma of having nowhere to go when "going global", and when the overseas market has been completely divided by competitors, the only thing waiting for Sichuan-Tibet Railway enterprises is the gradually rising risk of intellectual property infringement. In order to improve this situation, first of all, we need to strengthen the awareness of enterprise patent layout, mobilize the enthusiasm of enterprises to actively apply for overseas patents, and make the complete layout first as far as possible within the cost control. Secondly, during the construction of Sichuan-Tibet Railway or after its successful completion, it should apply for technology patents in overseas markets in advance, especially in major railway export areas, to form a tight patent layout network and prevent patent infringement to others due to falling into competitors' encirclement network.

(3) Develop different patent layout strategies according to local conditions. For example, in Russia, its railway technology patent applications focus on bogies, braking systems and supporting technologies, so our enterprises should strengthen patent applications for bogies, braking systems and other aspects. In Japan, we need to pay special attention to the network control, bogie and traction system of the rolling stock and the patent layout of the ground system and on-board system of the communication signal technology, etc., and pay more attention to the companies such as Siemens and Bombardier which apply for patents in these areas.

5. Summary

This paper takes two aspects of foreign legal environment and overseas patent layout as the starting point, and finds that Sichuan-Tibet Railway may face technical barriers and insufficient patent layout in the process of "going global". Based on the above-mentioned risks, strategies such as analyzing international treaties on intellectual property and strengthening patent layout are proposed in the hope of providing reference for risk prevention of Sichuan-Tibet Railway in the process of "going global".

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