



# Pioneering entrepreneurs and inventors: Technical imagination and new technologies in the early patents system in Chile (1840–1880)

Pedro Álvarez Caselli / Pontificia Universidad Católica De Chile / Santiago / Chile

Blucher Design  
Proceedings  
November 2016,  
Number 1, Volume 1  
[http://www.proceeding  
s.blucher.com.br/articl  
e-list/icdhs2016/list](http://www.proceeding<br/>s.blucher.com.br/articl<br/>e-list/icdhs2016/list)

## Abstract

This paper analyzes the practices and representations made in the areas of industrial property in Chile between 1840 and 1880, in particular, in the field of patents and introduction, with special attention to the attitude of the inventors and domestic and foreign to technology and innovation in products and processes entrepreneurs. In this context, the problem of rising nineteenth-century industrial competitiveness and the participation of the State in these matters innovation is examined, using applications for patents and the testimonies of the agents involved as "discursive texts". Also, the early use of terms in vogue today such as "design", "entrepreneurship" and "innovation". Finally, the emergence of a technical imagination that emphasized progress and that was also consistent with a tendency to imitation and adaptation of foreign technologies to the geomorphological conditions of the country

## Keywords

Industrial property, invention patents, native technology, technology transfer, innovation

## Introduction

The study of the old invention and introduction patents<sup>1</sup> and the register of the right of property of an invention or improvement of a well known device or procedure, turns out in a state of the art documentary source of an implicit discourse to learn about technological advances, as well as, the minds of a geographic zone in a well determined historical context. However, this practice will prioritize the technical description of inventions, above the opinions of who created them. Therefore, it was an implicit discourse, mixed with formal descriptions, demands of protection and administrative documents. As a matter of fact, it should be mentioned that recent research in relation to these practices has mainly been due to the analysis of its legal organization in terms of the study of the rights of industrial property in the past, more than its technological implications. The emerging of modern mechanisms of regulation over industrial property rights of the statement of the "rules of the game" (North & Hartwell, 1981), searched for the encouragement in the inventiveness of enterprising people, as well as the putting into practice of finds and technical advances, by means of granting exclusive privileges or temporary monopolies. At a regional level, the introduction of a first concrete lawmaking on invention patents took place in Brazil, due to a regulation published in 1830; 2 years later, a similar regulation was promulgated in Mexico, which had the support of the public and private sectors. The following law-ranking decree was announced in 1840, as part of the rights of the industrial property on a well determined product or procedure.<sup>2</sup>

## Beginnings of the industrial property right in Chile: The law of invention patents of 1840

The implementation of a first regulation system of industrial property in Chile, was kept in a context of internal code under a moderate political climate, with clear signs of more institutional stability, even in relation with the rest of the

---

<sup>1</sup>. An "invention patent" stands for the creation of something new, that did not exist before, while an "introduction patent" means a product or procedure that was already discovered and is introduced in a country for the first time.

<sup>2</sup>. As follows, in a correlative form, related regulations were issued in Venezuela (1842), Paraguay (1845), Uruguay (1853), Argentina (1864), Colombia (1869), Perú (1869), Ecuador (1880) Cuba (1884), Guatemala (1886), Costa Rica (1896), Nicaragua (1899), El Salvador (1901), Honduras (1902), Panamá (1905), República Dominicana (1907), and Bolivia (1916).

Latin American nations. Indeed, during the decade of 1840, an advance program was initiated, which combined the promulgation of laws –with the purpose of introducing improvements in the State administration for the production of

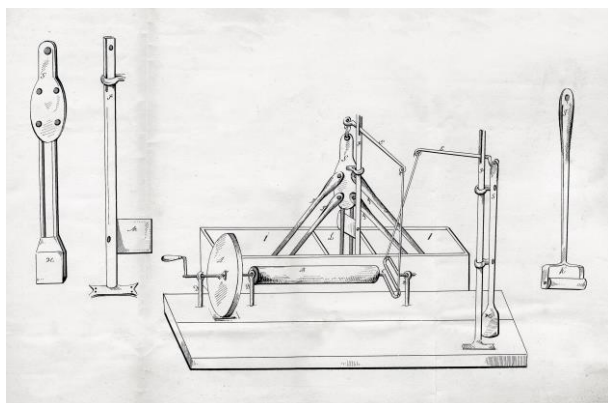


Fig. 1: Drawing machine amalgamation to benefit silver metal designed by Matias Cousiño and patented in 1844. Source: National Institute of Industrial Property

goods and services– with the arrival of the first steam boats and the starting steps in construction of roads, railroads, cabotage navigation and telegraph systems, as well as instruments for the expansion and integration of the national territory. In such scene, on November 9th 1840, the first law of industrial property was put into practice. Its main articles announced as follows:

The author or inventor of an art, manufacture, machine, instrument, preparation of materials or any improvement in them [...] will turn up at the Department of the Interior, making a clear description of the work or invention, swearing that it is his or her own discovery, unknown in the country, together with samples, drawings or models [...] The Department of the Interior will appoint a commission of one or more experts to examine the work or invention, and

to report on its originality [...] Once it has been found out, the President will grant the exclusive privilege for a period of no more than 10 years (Muñoz Sierpe, 1911).

In order to access the right of exploitation of an industrial patent then, a previous exam was required of a committee of experts, which tried to measure the degree of “innovation” and “usefulness” of a product (industrial object or machine), of a procedure (technical process) or of an industrial means (part of a device, chemical agent or mechanical resource) based on the checking of plans, models and samples required. Strictly speaking, the innovation and usefulness of what was privileged, was granted by the State, being the temporal monopoly the most proper way –or maybe, the least harmful– to establish the property rights on an invention or discovery.

In this context, 8 patents were registered in 1840. This amount is representative of the yearly average of registers in the decade where requests for the extraction and melting of minerals predominate and, to a lesser extent, the elaboration of basic food, cabotage and navigation, yarns and fabrics, milling, water transportation, construction material elaboration, benefit of artificial saltmines, timber treatment, gas production and elaboration of fungible and durable goods. Thus, between 1840 and 1850 a total of 74 patents were given –patents of invention or introduction– 14 of which reached good results, 11 were implemented with slow progress due to the lack of economical and technical resources and 49 failed in the middle of process or simply because they were not carried out.

During the first 10 years of the coming to effect of the system, the main applicants were Chileans, English and Frenchmen; then, Scots, Germans, Italians, Spaniards, Americans and occasionally, Latin American citizens (Argentina, Brazil and Peru). Possibly, in terms of the nineteenth century progressive culture that was transferred by the immigrants, the technical wisdom was acquired “from failure, rather than from success” (Petroski, 2011), a trend that was not only given in Chile, but also in a great part of the West. Due to this fact, the idea that inventions not only have to promote technological creativity, but also must be an instrument to protect the national industry, is already discerned in some of these early patents.

In relation to the aspects of modern orientation, that the 1840 Chilean law showed, we must emphasize the demand of an expert’s report which, to some extent, allows to determine the innovation and feasibility of the application of the invention or discovery; the adoption of a well ordered and systematic record of patents, and the availability of a space to keep written documents, plans, models and prototypes. Comparatively, the Mexican law of 1832, at first, did not consider the technical evaluation of applications and its characteristics of originality and usefulness. Moreover, between 1840 and 1850 the patents that were given in Chile reached twice as much the ones that were given in Mexico (Beatty, 2011). In the case of Brazil, 155 registers were made since 1830 until 1870 –a yearly average lower than 4– while in the national territory, during the space between 1840 and 1870, 293 applications were approved.<sup>3</sup>

Thus, a growing influx of capital, technicians and foreign entrepreneurs took place in Chile. They acted as the main mechanism of technology transfer and reception of ideology bonded to the promotion of

<sup>3</sup>. The National Archive of the Brazilian Empire started record the documents in relation to the requests of the patents that were accepted, only since 1870, once four decades had passed since the system had started to work.

invention capacity from leading nations such as England, France, The United States and Germany, where a great part of the immigrants and enterprising people came from, who patented inventions of their own or foreign discoveries,

apart from machines and unknown procedures, which were temporarily monopolized by means of an access to an exclusive privilege.

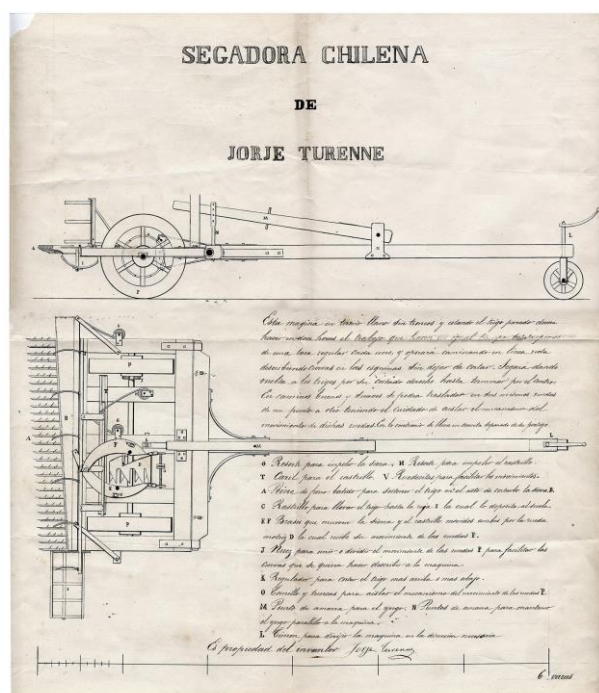


Fig. 2: Chilean harvester invented and patented by Jorge Turenne in 1853. Source: National Institute of Industrial Property

## Consolidation of the system of industrial property and of imported technology

The trend in the sectorial orientation of applications for inventions (less frequent) and of the ones for introduction (of greater demand) was produced within a cycle of expansion of the national economy between 1830 and 1860. At that moment, the State provided the import of mechanic means and the fitting out of factories that were built by citizens, mainly foreigners, with the purpose of moving the micro and family business of the production to a manufacturing regime of longer technological range and volume of industrial production capacity. This meant the movement of the traditional inventiveness (popular and autochthonous), formed by a sector of native craftsmen, half-castes and enterprising creoles towards an industrial futurology of productive orientation and of a larger scale, which encouraged the presence of foreign technicians and mechanics. The modern paradigm for private exploitation of the empiric knowledge was gradually internalized. The operations of

technology transfer gave an importation turn. It was monopolized by commercial houses overseas and by a group of new entrepreneurs with access to patents of "introduction". It broke up the colonial inventive tradition and although it was not eradicated, it allowed a kind of speech and practices which under the system of industrial property, promoted competitiveness and the use of an increasing technical language in which, mathematical representations and measuring slowly substituted stories and descriptions based on practical experience and personal lines of arguments.

It was a positivist rhetoric of technological development statement that was due to the convergence of principles and learning, coming from the scientific terminology that was in fashion and to the modern specialized legal language, where the term "art" was understood as the technical command of a procedure for the elaboration of a well determined manufacture and the term "design", without distinction, as a plan (sketch, drawing) or product (machine, object of applied art). In this context, the "usefulness" that it could bring to the country and in the second place, the "originality" of the proposal, were arguments of ordinary control in the applications for patents during this first historical cycle, above all, when reference was made to the term "innovation", a concept that was gradually applied since 1820 (Bernardo O'Higgins's government) to the disruptive inventions, as well as to the improvement of processes and products, mainly in the mining and agriculture areas. In respect to this last point, Domingo Faustino Sarmiento, a resident in Chile and an active enthusiast of technology pointed out in 1841:

It is true that the spirit of company and innovation has not been developed at a great deal in Chile yet, to establish the foundations for the improvements that we need; however, it is seen that under the benign influence of tranquility that is enjoyed, many subjects have been improved and others move forward fast towards a certain kind of prosperity (Sarmiento, 1896).

The use of well combined mechanical resources and the application of steam, were usual topics in the applications for patents, as well as the need of "constant observation" and the demand of carrying out "previous trials" by the inventor. Factors such as "economy" "duration" "manipulation ease" and "time saving" were considered as essential comparative advantages at the time of informing about usefulness and innovation of the inventiveness. On the counterpart, the lack of capital showed as anti values of a wrong enterprising.

However, during this considered period, maybe the most important facts in relation to technical procedures and doctrine of law subjects, were three determinations: First, the report of August, 1st, 1851, which stated the need that the designated experts, who made the exam of the applications for patenting, will not only evaluate the

“usefulness” of an invention, or an imported technology, but also the “disadvantages” that the granting of the exclusive privilege could bring along to industry, or the national economy, apart from making it clear if it was an invention or the introduction of something already known abroad; secondly, the legal difference between a patent of “invention” and the one of “introduction”, sanctioning this latest one –under the law promulgated in 1872– with the possibility of accessing, to a monopoly that was limited to a maximum of 8 years, and subject to intellectual property, which was brought from abroad. Since 1883 there was the option of extending up to 20 years an exclusive privilege given for a new invention by virtue of the importance or nature of the invention, according to the expert’s report and to the President’s opinion. All this, under the official instruction of conciliating the individual initiative and enterprising with the necessary interest for the community.



Fig. 3: Drawing model sunlamp for oil or gas patented in 1856 by Antonio Tognola. Source: National Institute of Industrial Property

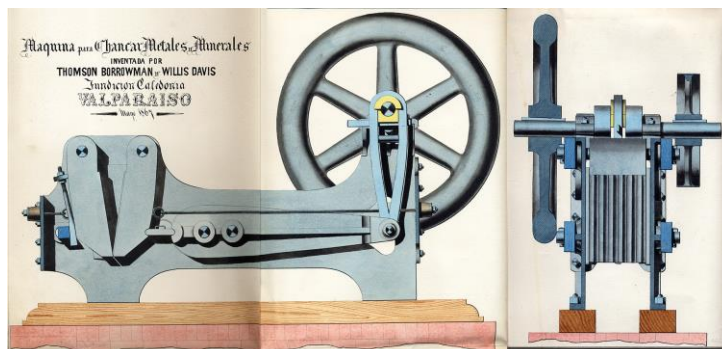


Fig. 4: Machine to be crushed minerals. The device was invented and manufactured in Chile by immigrants Thomson Borowman Willis and Davis in 1867. Source: National Institute of Industrial Property

Towards 1880, the exporting mining sector and the partial mechanization of mining extraction continued being the main national economy motor, a phenomenon that was directly related to the patenting of imported technologies and to a lesser extent, to the production of local inventions which managed to be installed, although with some budgetary and technical difficulties, as well as to the rising of a metallurgic industry of foundries which provided supplies that were consigned to the provision of armaments and pieces pointed towards an incipient market, giving later on, a turn to the production of machinery for the benefit of niter. Precisely, this last production sector was directly overlapped with the favorable turn of the national economy, once the Pacific War or “Niter War” was ended, situation that to a great extent tended to replace the previous system of a transition mixed economy (urban-rural) by a unidirectional capitalist system, driven from the European community to its “American appendix”.

## Final premises

Although the rising doctrine of the natural law emphasized the right of the individuals to private property and legal protection of the results of their mental and physical effort, the regulated concession of rights of patents brought an underlying problem: The imbalance between the stimulus to the local invention and the opening to the transfer of technology on the side of the State.

In relation to the agents who took part of the rising system of industrial property, impelled by the Chilean government, we can distinguish four groups of social actors. First, the core of craftsmen, who were the worst affected ones with the law of patents, promulgated in 1840, which did not capitalize, by means of a creole industrial advance, the domestic knowledge inherited from the demand of the traditional domestic market; next, and although it was not a group as large as the former, the group of foreign technicians and mechanics, protected by the political ruling elite, who provided the commercial fitting out of some strategic economic sectors in a short period; a third point, maybe the one with the most weight at the moment of achieving exclusive privileges or temporary monopolies, constituted by the advance of foreign merchants, enablers and consign agents of transnational commercial houses; finally, a handful of Chileans belonging to the ruling political class, to the landowning oligarchy and to the select group of citizens with professional studies (mainly lawyers, agriculturists, engineers and doctors).

Likewise, a part of the sector that was given to the technologic change and mechanization of the product, was not necessarily bonded to the scientific or university activities, the sphere of the industrial property or the importing commercial elite; moreover, some enterprising people –themselves– searched for fame and economic success by the addition of some small technical innovation or by the improvement of some mechanical object already



known. Typology added, particularly in Chile, the amateur of popular origin and the educated inventor, without necessarily having some kind of specialized scientific knowledge or studies of engineering or mechanics. In fact, the occurrences of this popular “underworld”, sociably invisible, were not always patented or did not always have the results that were expected, due to the lack of finance or to the evident disconnection with the slender protection instruments that the State offered.

Summing up, the embryonic Chilean regulations on industrial property, originated in 1840, which kept relatively steady until 1925, was a recognized institutional mechanism, to which some improvements were gradually introduced as applications for patents and the complexity of the projects to be implemented were increasing. That is why, refuting the statement of the ubiquitous historian Francisco Antonio Encina, who straightly explained that the system did not succeed (Encina, 1962), many of the main manufacturers of the analyzed period, asked for and obtained a successful or failed exclusive privilege, which necessarily implied the introduction of new procedures and advanced mechanical technology. This situation ended up taking over the inventive production of craftsmen and artisans established in workshops and potential zones of enterprising of native origin.

## References

- Beatty, E. (2011) *Institutions and Investment: The Political Basis of Industrialization in Mexico before 1911*, Stanford: Stanford University Press.
- North, D. and Hartwell, M. (1981) *Historia económica. Nuevos enfoques y nuevos problemas*, Barcelona: Crítica.
- Montero, A. (1913) *Registro General de Patentes de Invención, 1840-1912*, Santiago: Ministerio de Industria y Obras Públicas.
- Muñoz Sierpe, A. (1911) *Las patentes de invención. Legislación chilena y de diversos países extranjeros sobre la materia*. Legislación comparada, Santiago: Imprenta y Encuadernación el Globo.
- Petroski, H. (2011) *El éxito a través del fracaso. La paradoja del diseño*, México: Fondo de Cultura Económica.
- Sarmiento, D. (1896) *Obras de D. F. Sarmiento publicadas bajo los auspicios del gobierno argentino, Tomo X, Legislación y progresos en Chile*, Buenos Aires: Imprenta y Litografía Mariano Moreno.
- Teixeira Rainho, M. (1996) 'A inventiva brasileira na virada do século XIX para o XX coleção privilégios industriais do Arquivo Nacional', *História Ciências Saúde-Manguinhos*, vol. 3, pp. 319-332.
- Tocornal, M. (1864) *Moción sobre privilegios exclusivos*, Santiago: Imprenta del Ferrocarril.

## Biographical note

Pedro Álvarez Caselli is a designer, Masters and PhD candidate in History at the Pontificia Universidad Católica de Chile. His research interests include design and visual communication, history of material culture, technology and industrial property. He works professionally as a designer and consultant. He is the author, among other books, *History of Graphic Design in Chile*, *Chile Trademark: History of Trademarks and the Imaginary of Consumption in Chile*, *Mechanical Domestic: Advertising, Modernization of Women and Technologies for Home*, *Graphic History of industrial Property in Chile*, and Luis Fernando Rojas, *Graphic Work*.