

Patent Prospecting on Helmets in Brazil from 1997 to 2016

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Abstract

PPE (Personal Protective Equipment) is a genre that has several species, including gloves, glasses, boots, and among these is the helmet. The helmet is one of the main components in the safety, being one of the equipment of individual protection obligator in the most diverse work activities, which made this research necessary. Prospecting or the search for patents on helmets was carried out through the collection of patent information in the database of the Brazilian National Institute of Industrial Property (INPI). Analyzes of 127 helmet patent deposits were carried out, from 1997 to 2016, with 2003 being the year with the largest number of deposits, with 35 registrations. Brazil in the period of 1999 made a total of 106 deposits, the other deposits of origin in France 5, United States 4, Germany and Italy 3 deposits. The depositors with the highest number of applications are not resident, Pfanner of Germany with 3, and IBTEC de Goiás with 5 residents. It is also noted that the international ranking with the highest patents registered was A42B3 / 04 with 35 deposits.

Key words: Prospecting Technology, helmets, patents



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INTRODUCTION

During the industrial revolution specifically in the First World War there was a need for individual protection through of the equipment of the soldiers who were in battles. This demand started the creation and evolution of PPE (Personal Protective Equipment) (Ramos, 2015).

The personal protective equipment is a genre that has several species among them are gloves, goggles, boots, and the helmets, which is found in different tracks, whether in sports, construction or as protection in means of transport. Therefore, on a daily basis, society needs to use personal protective equipment. These equipments have been improving and improving over the years until reaching the form and improvement of adequate protection that we are currently used to (Cisz, 2015).

The importance of the helmet is found more commonly in motorcyclists, regarding the protection and reduction of head injuries range from four to ten times. Therefore, the mandatory use, under risk of punishment. (Yu et al., 2011).

In the informal labor market in Brazil, one of the fastest growing professions is that of motorcycle drivers, who work in the transportation of passengers. These workers have been occupying significant space in the transport systems, mainly of small and medium cities. This activity provides autonomy in the work and possibility of producing reasonable income (Amorim et al., 2012).

Regarding civil construction and other work segments, according to NR6 (Regulatory Norm) of the Ministry of Labor and Employment, in item 6.6.1.d, that it is up to the employer to guide and train workers on the appropriate use of PPE, conservation and storage of equipment (Regulamentadora, 2003).

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By definition, technological prospecting can be understood as a mapping for scientific and technological improvements that are capable of significantly collaborating to a society, then encompassing industry, the economy and the generation of new jobs (Kupfer and Tigré, 2004).

Patent documents that are published make it possible to develop new technologies. Being that industrial and scientific development can be verified through patents, which are innovations technologies. With due study, we can design actions that aim at the socioeconomic growth of a particular sector or region (Furtado, 1996).

According to authors Amadei and Torkomian (2009), inventors have security by protecting their innovations, giving them the freedom to offer their inventions on the market, so they can profit from agreements with companies and institutions that show interest.

The technological mapping of patents can present several opportunities for the sector or area studied, giving rise to new technologies, from the need. The study of the technological evolution of patents has been effective (Coelho, 2003).

Therefore, the analyzes carried out throughout this work, the search for patents serve as information for the scientific and business world, for example, in the decision about the placing on the market of a new product to be patented (Quintella, 2011).

Considering that the helmet is an important personal protection equipment for the user and over the years inventors have created and improved this equipment for all user follow-ups (Souza, 2005).

This present work consists in facilitating research on the evolution and improvement of the helmet as a means of individual protection. Patent prospecting in the database of the National Institute of Industrial Property based on the importance of helmets as personal protective equipment is the proposal of this research.

METHODOLOGY

The present research consisted in the collection of information on the database of the National Institute of Industrial Property (INPI) of Brazil, on patents related to helmet as personal protective equipment.

The search was carried out with the keywords *capacete* "or" *capacetes* (helmet or helmets in Portuguese) in the title of the patents. The documents found were computed individually, in relation to the depositor, Country of origin, year of filing, inventor and International Patent Classification (IPC), expressed through the frequency found. The research was conducted in November 2017, having as limitations of the study, the lack of analysis of documents not yet published, due to the period of secrecy of patent offices.

It should be clarified that, after the initial data collection, using the keywords described above, 428 patents related to helmets were found in the period in which the research was carried out. However, among these were a large number of patents that were related to the most different types of helmets, considering that the research is delimited to helmets as individual protection equipment, after which a filtering was done, of which 127 patents were left as a basis for the analysis of the research.

RESULTS AND DISCUSSIONS

The present research was carried out on the INPI (National Institute of Industrial Property) website, and a search for patents of helmets in the title field was made. In the 428 results found we filtered only the helmet equipment, without its accessories, in which we returned 127 patents.

During the research, 10 countries of origin of the patent registry were found, and for analysis purposes we consider the European Patent Organization as a country. The deposit period noted is from 1997 to 2016.

Figure 1. Patents By Country of Origin

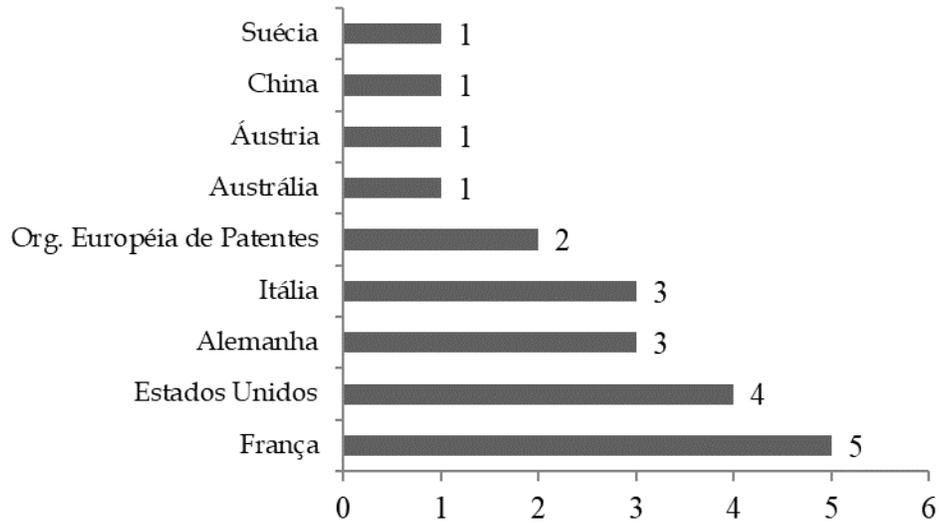
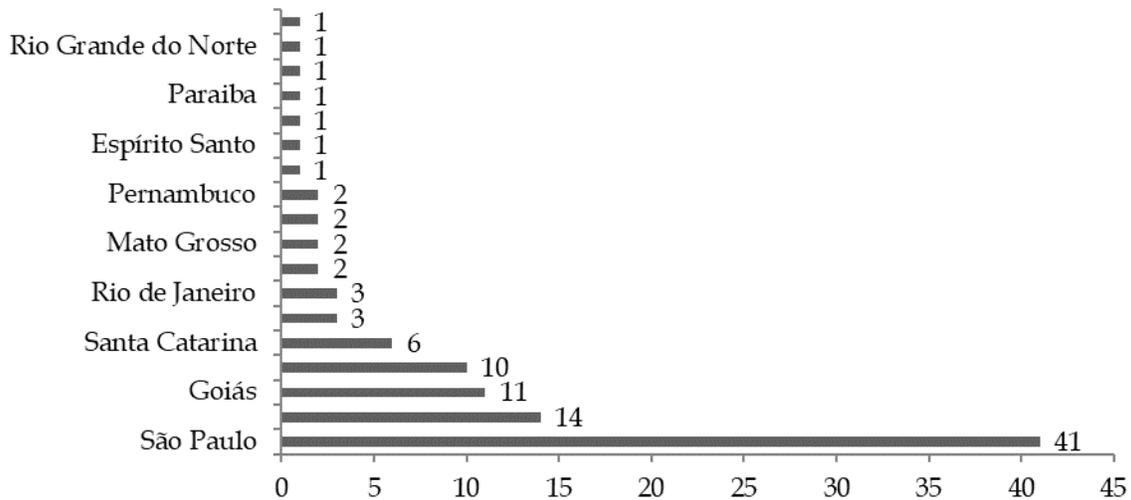


Figure 1 shows the country of origin of the patents of non-residents, France has 5 patents, followed by the United States 4, Germany and Italy 3. Total for the period 21 patents deposited in Brazil by non-residents. Residents' deposits totaled 106, in which they were distributed by states of origin as shown in figure 2.

Figure 2. Patents by Brazilian States



The state of São Paulo presented the highest number of patents, as observed in figure 2 with 41 deposits, followed by Paraná with 14, Goiás with 11 and Minas Gerais 6. The other states had deposits smaller than 10, where Santa Catarina has 6, while the Federal District and Rio de Janeiro 3.

Figure 3. Non-Resident Depositors

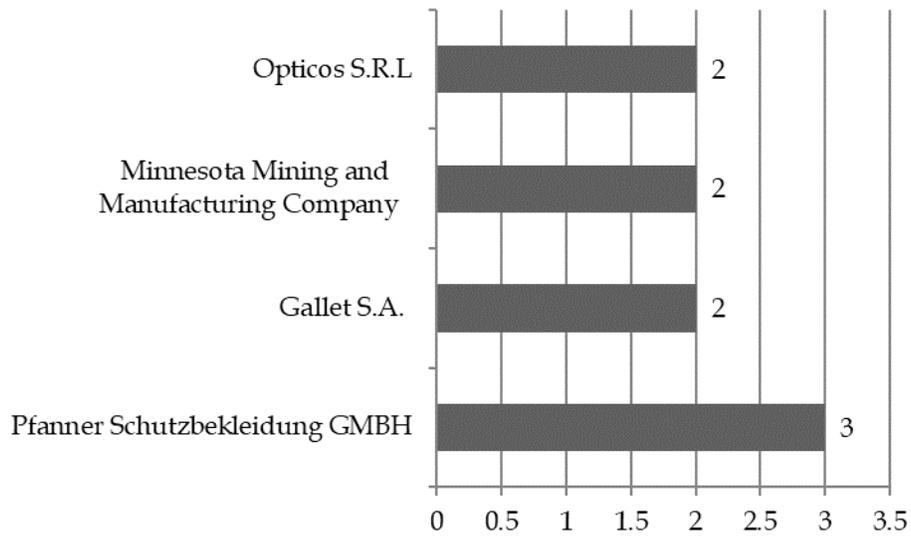


Figure 3 shows non-resident depositors with more than one deposit, Pfanner holds 3 deposits, of which Germany is the country, and if we compare with figure 1, if we see that it is the same amount. The Gallet depositors who have as country of origin France, Minnesota of the United States and Optics of Italy have 2 deposits each.

Figure 4. Brazilian Residents Depositors

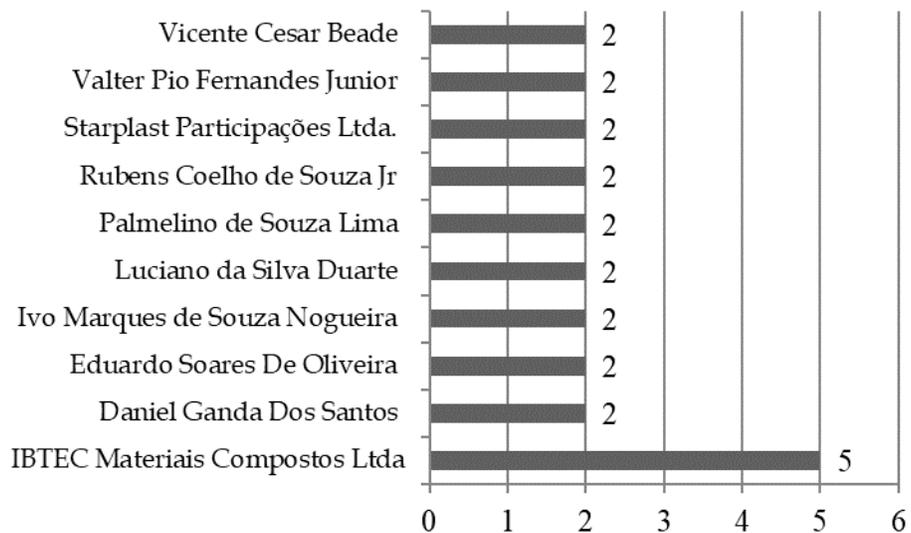
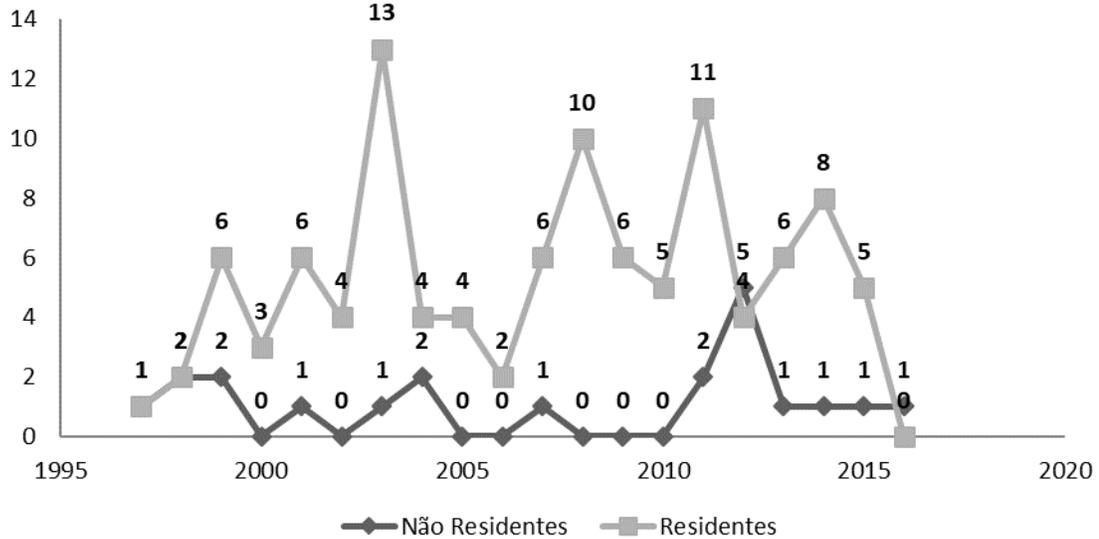


Figure 4 shows resident depositors with more than one patent, with only two companies highlighting IBTEC de Goiás and Starplast de São Paulo, with 5 and 2 deposits respectively. The other depositors, are individuals and are also the inventors of patents to be completed.

Figure 5. Evolution of Patent

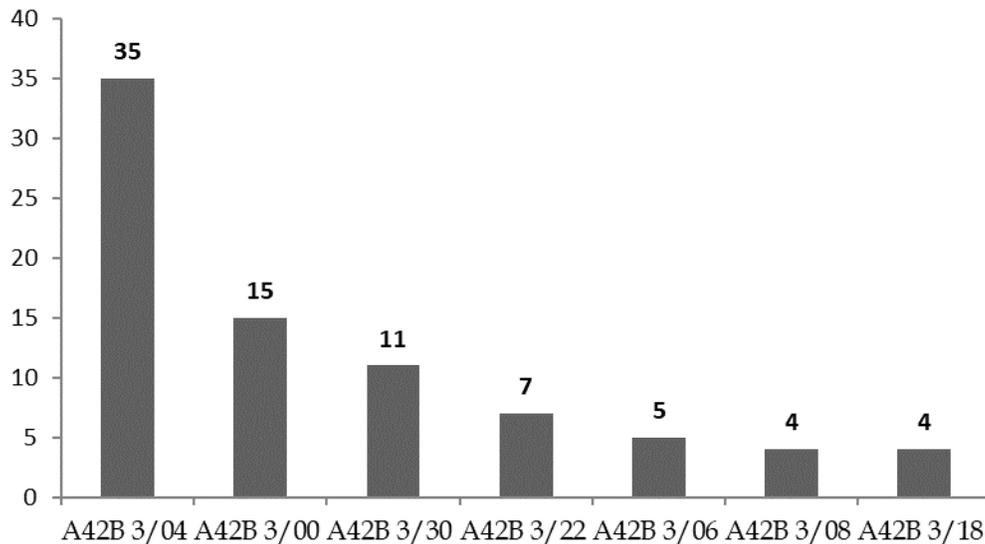


Deposits

Between 1997 and 2016, 127 patents were deposited, as shown in Figure 5. The year with the highest deposits for residents is 2003, with 13 patents, followed by 2011 with 11 deposits, and 2008 with 10. While for non-residents 2012 the largest number of deposits was made, totaling 5, over the other years there was a variation between 0 and 2 deposits per year.

One can notice oscillations in the evolution of such deposits, which in its beginning in 1980 had 3 deposits and thus, in 1983 with 5 deposits. This shows that during those years there was the concern of its inventors to register new patents.

Figure 6. International Patent Classification



According to Zan *et al* (2016) to be expedited prospecting is required the use of the International Patent Classification (IPC), to be known internationally the standard adopted by the WIPO (World Intellectual

Property Organization). Zan also explain in his work that this classification has sections, which in our search we find patents classified in Sections A and F, starting with the A section belongs to: Human Needs and F belong to section: Mechanical Engineering; Lighting; Heating; Weapons; Explosion. In Figure 6 shows the ratings with higher result in which A42B3 / 04 (Helmets; Covers for helmets; / Parts, details or helmets accessories) had 35 patent applications, followed by A42B3 rating / 00 (Helmets; Covers for helmets) with 15 deposits. Being predominant the classification related to helmets, as shown in figure 6, being represented in this figure 64% of the data.

CONCLUSION

The present work sought to carry out the prospecting of helmets, one of the main components in the safety, being one of the equipment of individual protection obligator in the most diverse work activities, in which the evolution of such deposits was approached.

Analyzes of 127 helmet patent deposits were made, these deposits were made in the period from 1997 to 2016, being the year 2003 with the largest number of deposits, which add up to 13 registries. Brazil is highlighted with a total of 106 deposits, the countries of origin of non-residents with larger deposits were France with 5, United States 4, Germany and Italy with 3. depositors with higher application is not resident is the Pfanner Germany with 3, and IBTEC of Goiás residents with 5. It is still noticeable that the international classification with the highest patents registered was A42B3 / 04 with 35 deposits.

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