Project Deliverable L: **Intellectual Property Search**

GNG 2101 - Introduction to Product Development and Management for Engineers

Faculty of Engineering - University of Ottawa

Submitted by:

Group C2

Roxel Fouego - 300047013

Sireen Hallal - 300096826

Peter Huang - 300021511

Fatemeh Omidi - 300159149

Liam Vannest - 300027883

April 05, 2020

Introduction

Following the COVID-19 outbreak, the final prototype could not be completed. For this reason, in Deliverable I, a detailed final report on the prototype was presented instead. The report included a clear documentation of the prototypes developed so far, as well as the intended state of the final product, using sketches, diagrams, and descriptions where necessary. Also, a detailed explanation of the purpose and function of the final prototype was included, along with a description of the client interaction with the product. The design team then described all the aspects and features of the prototype that were not completed due to the facility closures and "social distancing." A step-by-step action plan to complete the prototype and present it on Design Day was further included, which is what would have been followed under regular conditions. A Gantt chart was developed to clearly illustrate this plan. Next, a systematic testing and analysis plan was described, along with an explanation of how the prototype specifications would have been documented and compared to the target specifications developed in Deliverable B. After completing the final report, the design team gave a final presentation summarizing the design process and the intended function of the prototype. The presentation primarily included a brief summary of all of the key components of the project deliverables, as well as a description of the solution options and the chosen concept. Decisions made throughout the design process were also presented, along with a conclusion on the lessons learned and future work plans. Subsequently, the design team created a comprehensive user manual that can be used as a standalone document for the purpose of passing the project to the client or to future students. The manual followed a standard technical report format. It was primarily composed of the important features of the product, as well as its function and capabilities. Detailed instructions were further provided on how the model of the prototype was developed, how it would be built, and how it should work. Additionally, installation and operation procedures were listed, and maintenance instructions were clearly stated. Next, health and safety guidelines, other precautions, and a troubleshooting section were incorporated into the user manual. Furthermore, the design team thoroughly explained all the design files (3D printed files and laser cutting files) that would be needed to create the prototype and provided a link for their location on the team's MakerRepo account. Finally, a summary of the work done was included, along with reflections on the lessons learned and the most productive avenues for future work. The user manual was also uploaded to the design team's MakerRepo account for future students who might want to take the project to the next level. The final step is to conduct an intellectual property search. The purpose of this search is to investigate intellectual properties related to the rowing machine adapter and to explain their importance with regards to the product. First, the design team explores several intellectual property databases and identifies 3 intellectual properties related to the rowing machine adapter. Then, the relationship between these intellectual properties and the product is clearly illustrated. Subsequently, the team provides an explanation of the importance of these intellectual properties and the impact they could have on the success of the product. Finally, a

description of the way that the design team intends to manage intellectual property created with the product is included, assuming that the final prototype will be developed and marketed.

1. Intellectual Properties

Intellectual properties can include patents, industrial designs, integrated circuit topographies, trademarks, copyrights, creative commons or open source software. According to the Canadian Intellectual Property Office, patents "cover new and useful inventions (product, composition, machine, process) or any new and useful improvement to an existing invention."[2] However, "an industrial design is about how something looks. It protects a product's unique appearance, not what it is made of, how it is made or how it works."[2] Both of these are related to the team's design since it is a physical product with a specific appearance. Trademarks, on the other hand, "can be one or a combination of words, sounds or designs used to distinguish the goods or services of one person or organization from those of others."[2] Trademarks could also be related to the design team's project since a logo or brand name can be developed to represent the product. Copyrights "provide protection for original literary, artistic, dramatic or musical works (including computer programs) and other subject matter known as performers' performances, sound recordings and communication signals."[2] This type of intellectual property is not a crucial concern to the design team's product because it does not involve dramatic work or the like. Additionally, integrated circuit topographies are unrelated to the team's design since the product does not involve any electronic circuits. Compared to patents and industrial designs, creative commons are not as significant to the product either. Finally, the softwares used for this project (SolidWorks and TinkerCAD) are not open-source softwares. Therefore, the design team focused primarily on patents, industrial designs, and possible trademarks. Thorough research was conducted using the following websites.

1. Canadian Intellectual Property Office
2. Free Patents Online
3. US Patent Online
4. Google Advanced Search

The design team found the following IPs that are related to the rowing machine adapter. They are all patents.

a) Upper Extremity Portable Exercise Machine
b) Wheelchair Occupant Motion Stabilizer for Exercise Machines
c) Rowing Machine

2. Relationship to the Product

a) Upper Extremity Portable Exercise Machine

This product is a portable exercise machine that allows the user to perform a variety of upper body exercises such as chest press, seated-row, seated triceps pull down, and abdominal crunches.[4] The key feature that is similar to the design team's product is the articulated arm bar. This arm bar is comparable to the team's knee bar. The arm bar protrudes out of the machine in the same way that the knee bar does in the rowing machine adapter. It is also adjustable and uses the same mechanism for adjusting (holes alignment).

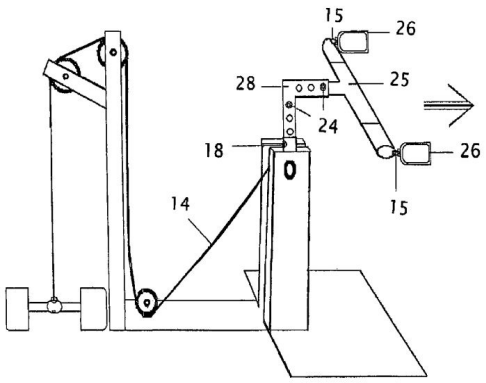

Figure 1a. IP 1 Design Sketch

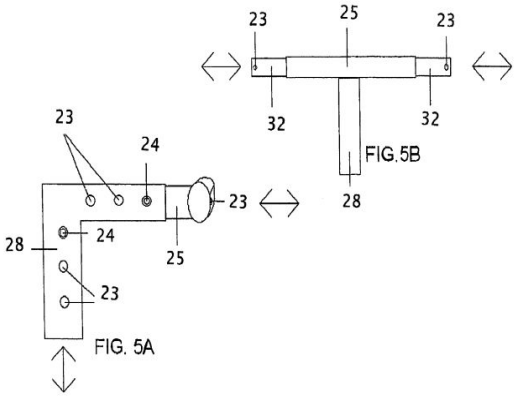

Figure 1b. IP 1 Design Sketch - Arm Bar

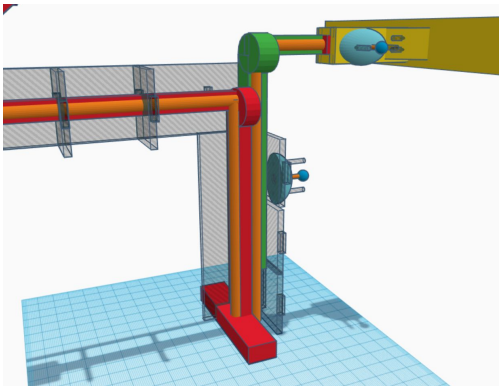

Figure 2. Final Prototype 3D Model (Side-View)

However, the remainder of the features are not similar to the rowing machine adapter. For example, the team's product does not involve any pulleys. In addition, the IP is not specific to wheelchair users and is meant to accommodate various impaired users going through physical

rehabilitation, such as amputees or people who suffer from obesity.[4] Moreover, it is not an adapter that is attached to rowing machines; it is designed to be a standalone machine.

b) Wheelchair Occupant Motion Stabilizer for Exercise Machines

This product is a motion stabilizing system that is intended for wheelchair use.[5] It involves a unique mechanism of locking the wheelchair in place during the exercise.[5] Importantly, it involves a lap bar pad mounted on a lap bar rod.[5] This structure is very similar to the knee pad that is included in the design team's model of the product and is made of the same material (foam roller). The design team's product also involves a rod that serves as a base for the knee pad. Another aspect is the adjustability feature of the lap bar rod and pad. They both allow for horizontal length adjustments and have similar locking mechanisms with lock pins as shown below.

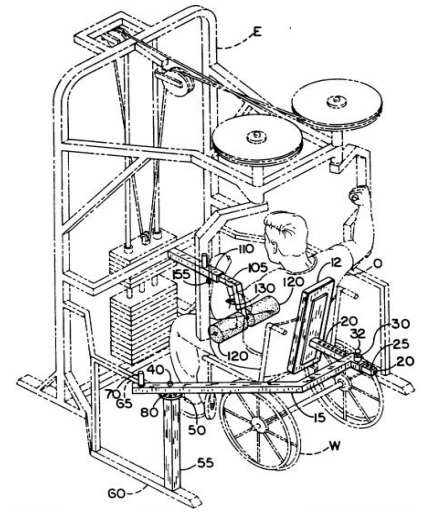

Figure 3a. IP 2 Design Sketch

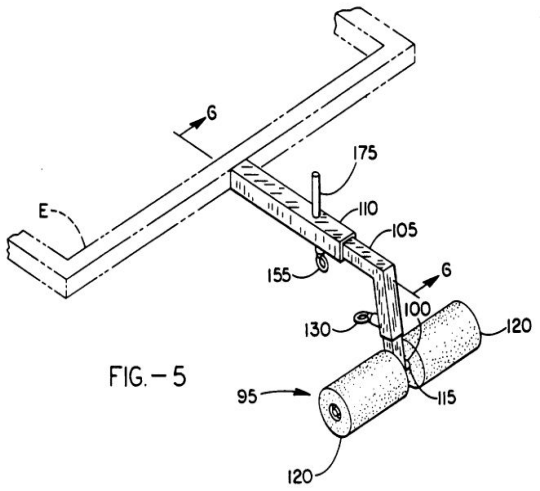

Figure 3b. IP 2 Design Sketch - Lap Bar

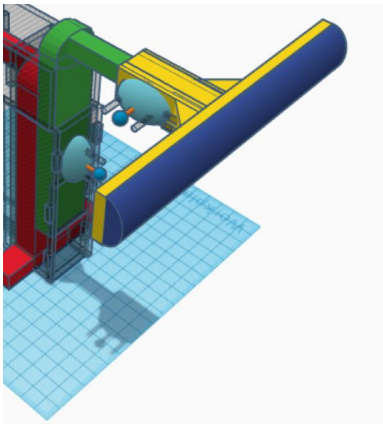

Figure 4. Final Prototype 3D Model - Knee Pad and Support

However, the remainder of the product does not involve any other similar features to the design team's rowing machine adapter. Furthermore, this particular product is designed for the purpose of motion stabilizing in order to limit undesired motion during manipulations of an exercise machine associated with the system.[5] Therefore, it is not specific to rowing machines like the design team's product. Finally, it is not an adapter that is attached to an exercise machine; it is a machine itself.

c) Rowing Machine

This product is the original Concept 2 rowing machine. It is considered to be an intellectual property since the team is improving this rowing machine, which is an existing patented invention. The team's adapter is not a standalone product and must be attached to the rowing machine in order to be used. Hence, it alters the features of the machine and results in an improved one. The rowing machine adapter essentially acts as a replacement for the seat monorail of the original machine, thus eliminating a component of the machine and adding a new one. Also, the team planned to 3D print the exact design and dimensions of the handlebar holder to place it on the adapter. This design of the handlebar holder is unique to the original machine, which may cause potential legal issues.

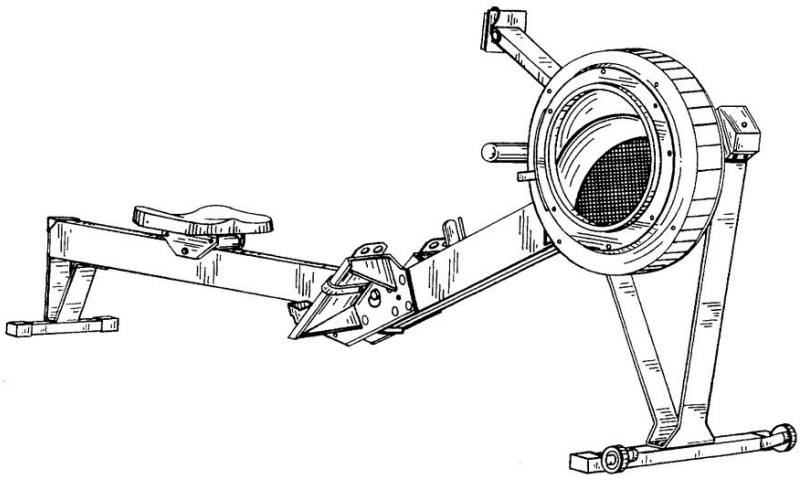

Figure 5. IP 3 Design Sketch - Concept 2 Rowing Machine

d) Additional Possibility:

The Adapt2Row product is quite similar to the design team's product. It is an adapter that functions in the same way and clips onto a Concept 2 Rowing Machine in an identical manner. It also involves a knee support similar to the design team's product.[6] However, it lacks a handlebar

holder and a foam roller for comfortability. Even more, it has a different base and is not adjustable in any dimension. Furthermore, it is constructed from different materials.

Figure 6a. Adapt2Row Demonstration

Figure 6b. Adapt2Row Product

This product was listed as an additional possibility since it has not been patented according to research. Despite this, it could still present legal issues due to the rules regarding public disclosure and the protection of designs that have already been released to the public.

3. Importance and Impact of Intellectual Properties

There are many benefits to obtaining intellectual property rights. Not only can they be used to protect creations, but they can also provide useful business tools that can be exploited commercially. IP property rights can be licensed so that others can use the company's brand name or make products that fall within a patent, for which the company will receive a royalty payment. IP can be used to give the upper hand in negotiations and can be exchanged for mutual benefit. Furthermore, IP rights can be obtained globally, unleashing the business's potential to a global market. However, it must also be borne in mind that not only is IP important, but that of others needs to be considered as well. A designer needs to be aware of competitors' rights. Searching through the above links helped the team find some patents similar to the rowing machine adapter. All the mentioned designs have a common goal of producing wheelchair-accessible fitness equipment. The main aspect is to develop or adapt a piece of fitness equipment so that the wheelchair-user can perform the workout without needing to leave his/her wheelchair. When it comes to the adjustability mechanism, there is a level of similarity to the team's product as mentioned previously. These intellectual properties can certainly have an impact on the team's success, assuming that the rowing machine adapter will be marketed. The team might have to alter the design or certain features of it if it infringes on one or more of the patents described above. For instance, the team might have to develop new designs for the

handlebar holder and knee pad in order to prevent any possible legal issues and high infringement fines. Specifically because the team is designing an adapter for an existing rowing machine, filing for a patent without infringement of the original rowing machine patent may present some challenges. An unpatented design may hence put the potential business at risk.

Even though a trademark was not listed as one of the three intellectual properties, it could certainly have an impact on the success of the product and the business. This is because, if the team wants to develop a company that sells rowing machine adapters, it will have to create a brand name, as well as a logo. Logos and names are protected under trademark rights; therefore, the team would have to ensure that the company's logo and name is unique and different from any trademarked logo or name.

4. Plan to Manage Intellectual Properties

If the team decides to market the rowing machine adapter, several steps need to be taken in order to avoid legal infringements and obtain rights for the design. The team would first conduct a more thorough research on various patent websites in order to determine whether the product has exact features of a certain design and whether infringement may occur. If the design team finds out that certain features are identical, some aspects of the product might have to be changed. However, if the team members feel confident that the product is unique, they would begin working with a patent agent, who would be able to accurately describe any potential legal issues that may have gone unnoticed. After dealing with these issues and making any necessary adjustments, the design team would file for a patent at a patent office in North America, possibly with some outside investors who could help with the financial cost. This would provide the team with the legal right to exclude others from making, using, selling and importing the invention of the rowing machine adapter for 20 years, in exchange for publishing and enabling public disclosure of the invention. Ideally, the team plans to file a patent application before disclosing the product to the public, which is more beneficial. However, if the patent was not filed after public disclosure due to financial constraints or other unexpected situations, the team would have a guaranteed time of one year to successfully file for a patent application. Since the product has a unique appearance, the design team would also consider filing for an industrial design patent if the financial situation allows it. As far as the ownership of rights, it would go to all of the team members because they have all contributed to developing the design. Then, depending on the success of the business, the team would continue to invest in the patent, keeping it up to date and protecting the design. The team would also consider expanding internationally depending on the success of the company. Moreover, if rights from another patent were required, the team would attempt to negotiate a profitable deal for using their design, which would involve either buying, renting, or paying royalties. In addition, if another company wants to use the team's design, they could negotiate deals with the company. This can lead to more profit since these companies will have to pay royalties to use the patented design.

Other intellectual properties, such as trademarks, would be considered down the line after a successful start-up. The design team would invest time and resources into creating a unique logo and brand name, ensuring that it is different from any other ones. Then, the company would apply for obtaining a trademark right. Trademarking could help in future marketing and in establishing a wider customer base, while ensuring a distinctive identity.

Conclusion

An intellectual property search was successfully conducted. The design team explored several intellectual property databases and identified three main ones that relate to the rowing machine adapter. Descriptions of the relationship between the intellectual properties and the product were then included, along with an explanation of their importance and the possible impact on the success of the product. Finally, the team provided a potential plan for managing intellectual property created with the product. The design team learned a lot from this project and was privileged to have the opportunity to design a model of a rowing machine adapter that would be used to improve the lives and health of wheelchair-users. The team plans to take the project to the next level in the future and to assemble the product completely, according to the developed model. The members are confident that it would be fully-functional once developed.

References

1. Adapt2Row. Adaptive rowing without leaving your wheelchair. http://www.adapt2row.com/ (Accessed April 03, 2020).
2. Canadian Intellectual Property Office. Industrial design guides. https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr02300.html (Accessed April 04, 2020).
3. Canadian Intellectual Property Office. What is a patent? https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr03716.html (Accessed April 04, 2020).
4. FPO. United States Patent US7470221: Upper Extremity Portable Exercise Machine. http://www.freepatentsonline.com/7470221.pdf (Accessed April 03, 2020).
5. FPO. United States Patent US5277685: Wheelchair occupant motion stabilizer for exercise machines. http://www.freepatentsonline.com/5277685.html (Accessed April 02, 2020).
6. Google Patents. USD367508S: Rowing Machine. https://patents.google.com/patent/USD367508S/en (Accessed April 03, 2020).