

To: Dr. T. A. Edison
Professor of Mechanical Engineering
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Team Firstrate

Subject: Progress in design and development of Walker-Skis, a novel sport-device

Date: 8 November 2013

Abstract

Our team is working to design and prototype "Walker-Skis," ski-like attachments to be put on the feet of walking frames so that people can ride down snowy hills without using conventional skiing equipment. We expect Walker-Skis to be a marketable novelty item. We are currently working on our first prototype, proceeding with our project as planned, and will be done with our project on 15 December 2013, which is the official due date for its completion.

Introduction

We were given the task of creating a new product design that might prove marketable as a novelty, and we were given permission on 8 October 2013 to go ahead with our proposed product, "Walker-Skis." This report is meant to inform the reader of the progress we have made in completing the tasks we have set for our project.

This product consists of two short ski-like planks, each with two cups to accept the feet of a conventional walker (or walking-frame), and a cross-bar between them on which the user will stand. To use it, the user will stand on the cross-bar, support his or her weight on the frame by resting the hands on it, and then, leaning forward, will slide down snowy hills. The figure below illustrates the device.



Clearly shown are the frame, the runners and the safety cushion mounted across the lower part of the structure.

Project Description

This project involves nine main tasks:

1. *Deciding upon an initial design.* This task involved using TRIZ techniques to adapt current technology to a new purpose. (Completion date: 2 November 2013)
2. *Researching current designs.* This task involved conducting a patent search of current designs on the market in order to discover what the design space is for a device such as ours, and to give us further ideas for the refinement of our product. (Completion date: 8 November 2013)
3. *Choosing and obtaining appropriate materials.* We will review useful guides and handbooks through Engineering Village in order to choose materials for our device, which materials we will then order for testing and prototyping. (Completion date: 10 November 2013)
4. *Construction of first prototype.* This involves building two sets of Walker-Skis to our design specifications. (Completion date: 15 November 2013)
5. *Conducting tests on our prototypes.* This task involves conducting several tests on our prototype and testing one set to destruction. (Completion date: 22 November 2013)
6. *Producing final design.* We will review the results of our tests and, in view of what we will have learned, we will produce a final design. (Completion date: 1 December 2013)
7. *Conducting Market research.* We will conduct market research to determine the most likely consumers of our product. (Completion date: 1 December 2013)
8. *Preparing for presentation of the device to class.* We will prepare an oral presentation supported by Powerpoint slides and deliver the presentation to the class. (Due date: 8 December 2013)
9. *Drafting final report.* We will draft and submit a formal design report describing the design, function and marketability of our device. (Due date: 15 December 2013)

Tasks completed*Deciding upon an initial design*

We met as a group on three occasions and decided that a device consisting of two ski-like runners made of a flexible, yet strong material, and joined by a wide cross-piece, would allow a walker to function as a skiing device.

Task completed: 2 November 2013

Researching current designs

We conducted a patent search through the United States Patent Office and were unable to find any device resembling ours. We did learn that certain materials, such as fiberglass, are favored for skis.

Task Completed: 5 October 2013

Choosing and obtaining appropriate materials

A search through materials available on Engineering Village led us to order and obtain 20 feet of fiberglass of a width of four inches and a thickness of 1 inch for the runners. We have obtained a second piece of fiberglass 7 feet long, 1 foot wide and 2.5 inches thick from which to make a pair of cross-pieces for construction and testing.

Task completed: 9 November 2013

Work not yet completed*Construction of first prototype*

Two of our team members will undergo training at the Wilson Student Project Center on the North Campus of the University of Michigan. Following this we intend to build two sets of Walker-Skis to our design specifications, and we will do so under the supervision of a trained IA.

Conducting tests on our prototypes

We will conduct test of flexion and torsion on our prototype Walker-Skis in order to determine what forces are needed in order to break them. This should give us an idea of the amount of weight the assembled device could safely bear.

Producing final design

After reviewing the results of our tests we will produce a final design.

Conducting Market research

We have made an appointment with an information specialist at the Ross of School of business to help us do some research into markets for our device. The specialist cannot meet with us, however, until November 28, so we must push the completion date for this task back by three days.

Preparing for presentation of the device to class

This item is subject to a fixed date, therefore we will have the presentation ready on the due date of 8 December 2013.

Drafting final report

This item is subject to a fixed date, therefore we will have the presentation ready on the due date of 15 December 2013. We will divide up the sections of the report, draft it, exchange the sections for proofing, and then assemble it and revise it for consistency.

The Gantt chart below shows our progress to date.

Gantt Chart

As the Gantt chart shows, we are currently on track to finish the project by the due date of 15 December 2013

Conclusion

At the moment the project is on time. We expect it to continue on time despite the difficulty scheduling an appointment with the information expert at the Ross School of Business: we have taken this into account and are prepared for it. Therefore, we expect to complete the project on time and have both the final prototype built and the final report filed by the due date of 15 December 2013.

If you need further information, please contact Bob Smith at

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