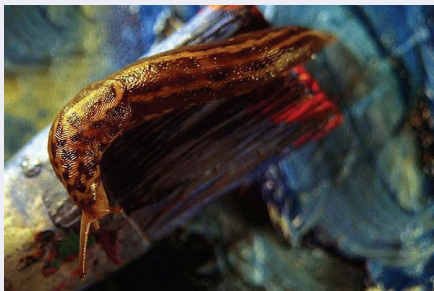


Project Goals:

The goals of this project is to create a motorized easel that:

- 1) Supports a maximum canvas size of 36"x36"
- 2) Allows for movement of the canvas in four degrees of motion, tilt, x, y, and z directions
- 4) Is portable & light
- 5) Is easily repairable
- 6) Is aesthetically pleasing



Team Members

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Painting "Easely"



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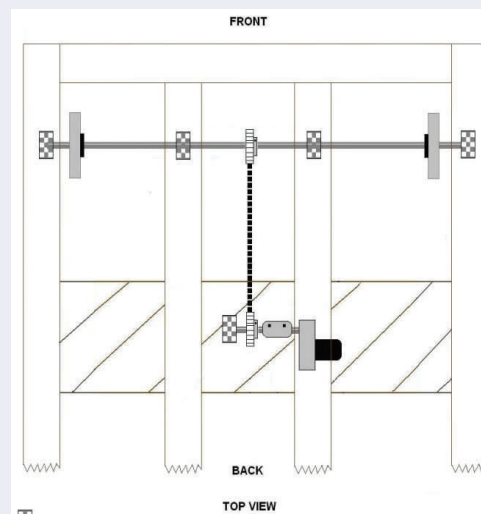
Background

Our client is an avid artist that desires a painting easel that will adjust its position to suit her capabilities of movement. Her limited mobility arises from osteogenesis imperfecta (OI), a genetic disorder characterized by bones that are easily broken. Our client's needs arise due specifically due to a limited free range of motion and reach that mandates she moves via motorized wheelchair. Since she does not paint in her wheelchair, there are obvious constraints in her ability to maneuver around a canvas. The client typically paints while lying on her side and requests a motorized easel that can support a maximum canvas size of 36" x 36" and move in such a way that she can reach all areas of the canvas while lying stationary. This requires the easel to move the canvas in four degrees of motion, the x , y , and z directions and allow a small degree of tilt. Other constraints for the easel design are that it is compact enough to allow it to be easily moved to various locations, i.e. fit through doors and light enough for an individual to manipulate, and that it is constructed with aesthetics in mind.

Design

The design of a remote control easel allows the client to control the mechanical functions of the easel with minimal strain. The remote control will send a signal to a receiver located on the easel frame, which will then be relayed to a microcontroller system that correctly activates each motor system.

Drive System (Forward/Backward)

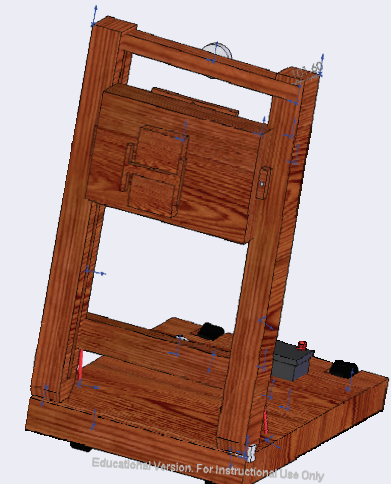
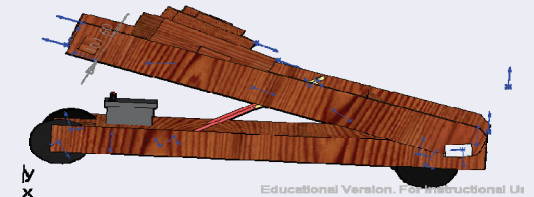


The entire easel will be mounted on a motorized base. The base will sit on four wheels, and the front two wheels will be motorized. The motors will be powered by a 12 volt battery.

Frame & Structure

The portion that holds the canvas will fold

down onto the base. A handle will be attached to allow the entire device to be wheeled around with a majority of the mass of this device located at the lower, wheeled fulcrum (back wheels).



Canvas Movement

The horizontal and lateral movement will be controlled by a system of motorized pulleys. Two motors that will be used to facilitate movement of the canvas left and right and up and down, respectively. The movement will be guided by mounted slide rails.