Easel 5000
Week 9 Report
March 24 - March 31, 2006
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Work Completed
PCB Board

The plastic enclosure was received for the PCB from Hammond Manufacturing. The dimensions were cross checked with the schematic supplied by the company. Then the dimensions were checked with the PCB board. They didn’t line up perfectly so some time was spent making the board more linear to better fit the box. The PCB was then expanded to fit the screw holes and space the LEDs out for a better fit in the final product. These were the last steps in designing the PCB and preparing it for order. The pricing for the PCB was done and then a purchase requisition form was filled out and filed with Chris. The holes for the switch, battery supply, LEDs, and potentiometer were then traced on the PCB enclosure to simplify drilling when the PCB arrives.

Figure 9.1 – the box that will be used for the PCB board.
Machine Shop Work

This week more machine shop work was done. Additional connecting components were cut to length, ¼” holes were drilled in the proper places, the battery casing was completed, and lip brackets for the canvas holder were cut and drilled.

*Figure 9.2 – The saw: it was used for cutting the aluminum lip for the canvas holder.*
Assembly

The assembly of the canvas holder, canvas arms, and canvas clamp are complete. The mechanism for securing the easel to the table has also been installed, but the threaded rods need to be cut to the appropriate length, and load distributors need to be cut from aluminum stock that was acquired from the machine shop.

Using PVC glue borrow from another team, team 3 constructed the battery enclosure from the PVC cut in the machine shop. Due to the wiring and desire for a design that could easily be broken apart for storage, the battery placement had to be changed. The battery will now be mounted on the easel clamp to shorten the amount of internal wiring that will need to be done for the easel frame.

Another important part of the easel frame is the built in safety system that was added. In order to reposition the easel, both locks restricting a certain range of movement must be unlocked and thus serves as a secondary locking mechanism. The use of two support arms also solved the oscillation problem present in the one arm design.

To secure the canvas in place, the rubber strips included in the original design were added to the canvas holder. Team 3 also decided to add rubber pads to the corners of the easel base to ensure that the base remained solidly in place when the primary base-to-tray attachment mechanism engaged.
Figure 9.3 – Seth assembling the easel after completing machining work on the easel base.

Testing

With all the mechanical aspects of the easel prototype finished, testing for the easel took place. Using a considerable amount of "painting" force at various positions, it was seen that the easel was able to perform very well. The torsional problems that were previously observed no longer exist with the two arm system.

Future Work

Finishing touches are being applied this week and next week. The major portion of the project is done. Next week will include final mounting of the battery and PCB/LED lighting system. Any final kinks will be worked out and the project will be completed.
Project Review

The lighting system, battery mount, and easel-to-table attachment mechanisms are nearly finished. Team 3 is on schedule for finalizing construction of the easel next week. At this point construction is on hold pending the arrival of a few items. Once those parts are received, construction will resume and will hopefully be done by the deadline. This may take a few extra hours in the remaining week but completing the project should be possible.

Hours
Ali – 11 hours
Seth – 11 hours
Justin – 11 hours

Figure 9.4 – Updated schedule for the project