Painting Solutions for Limited Mobility  
Weekly Report #4  
Wednesday Feb 8th – Wednesday Feb 15th

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Team #1  
BME 291  
15 February 2006

Work Completed:

During the week of February 8th – 15th several parts were received such as the wrist bracing mechanism, as well as the PVC rod. The PVC was cut to a 1” cylinder and several holes were placed to create the locking mechanism that will be used to position a paint brush or marker for painting.

Three 8” pieces of aluminum stock were cut and deburred. These pieces are currently being interfaced with each other by drilling _” holes on each end in order to bolt them together. A nylon washer-spacer then inserted to create a low friction swivel joint that can be adjusted by tightening or loosening the bolt.

Also during the week, the GCX medical mounting clamp was ordered, which will be used to attach the system to the post of the wheel chair. The post clamp will be capable of interfacing with any rail from .75” – 1.5”. This will increase the positioning flexibility for this device. The ball joint device recommended by Mike Sears has been dismissed due to the inconvenient and unnecessary positions that it will provide.

A fiberglass design and template is currently under construction and will be used to mold a cast that will interface the painting arm of the client with the device. The fiberglass and cushioning are set to be ordered by the end the week, as well as several of the necessary bolts and fasteners.

Future Work:

There is still 65” of aluminum stock left which will be used to interface a post that can be clamped to the chair. Nylon washers need to be purchased in order to create the low friction swivel joints which will allow for positioning.

The PVC cross section needs to be mounted to the wrist brace and a device to secure a brush or marker of a variety of sizes needs to be incorporated. Also the implementation of a gas spring is under consideration for use of raising or lowering the
device to remove the use of adjusting it by means of loosening and fastening a brake handle.

Work for the Next Few Weeks:

- Decide whether to incorporate gas spring
- Interfacing of hinges for support system with a wheel chair
- Bolting stock joints
- Interface Clamp
- Construct a sleeve or casting for Tom’s arm

Project Review:

This week consisted of dimensioning the necessary lengths of the aluminum stock arms, as well as finding a solution for durable pivot joints. Several contacts were made in order to reach the best possible solutions for dimensions and materials. After researching fiberglass construction more progress can be made on forming a template mold and cast for the arm of our client.

Furthermore, Patty Mitchell needs to respond with dimensions and size estimates in order for our project to be designed as specifically as possible and ensure that the design meets all necessary criterion in order to reduce any chances of failure.

Updates to Timeline:

- Obtain a template wheel chair
- Dismiss use of ball joint
- Incorporate fiberglass mold into design
- Supplementary ordering of fiberglass, and fasteners
- Decision for use of gas spring
- Interface clamp with post
- Creation of swivel joints
Hours Worked:

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<thead>
<tr>
<th>Date</th>
<th>Time</th>
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<tbody>
<tr>
<td>Thursday 2/9</td>
<td>9:15 Am – 10:00 Am</td>
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<tr>
<td>Friday 2/10</td>
<td>1:00 Pm – 5:00 Pm</td>
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<td>Monday 2/13</td>
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<td>Tuesday 2/14</td>
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<td>Wednesday 2/15</td>
<td>10:00 Am – 1:45 Pm</td>
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Hours total = 11 Hours