NORTHERN ARIZONA UNIVERSITY

From: Jialan Sun

To: Dr. David Trevas

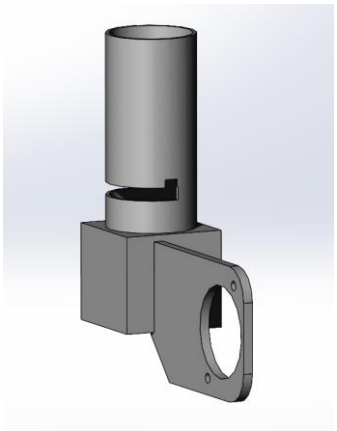
Date: 10/11/20

Re: Individual Analytical Analysis

Individual Analytical Analysis

Our project is to improve wheelchairs based on customer requirements and existing designs. The FMC wheelchair project aims to solve three main problems. First, improve the brakes and anti-theft devices of wheelchairs. Secondly, its purpose is to put the leg support under the wheelchair. Third, we try to design controllable leg supports. The leg support can be raised or lowered slowly and steadily, which can prevent the patient's leg shape from being damaged again due to the rapid drop of the leg support. The initiators of our project are hospital and school project managers. The success of this project is critical because it can change the situation of many wheelchair thefts and reduce hospital losses. In addition, it can improve user experience and increase security. [1]

My individual analytical analysis is to put the leg support under the wheelchair. My design is to rotate the two leg supports inward to make them under the wheelchair. The leg support is attached to a steering tube. Cut a long strip 4mm wide around the center 190 degrees on the tube. Then cut up a slot 2.5 mm deep and 4 mm wide. The picture of steering tube is shown below. [2]



There is a boss with a diameter of 3mm on the armrest corner tube. The picture of armrest corner tube and the boss is shown below.

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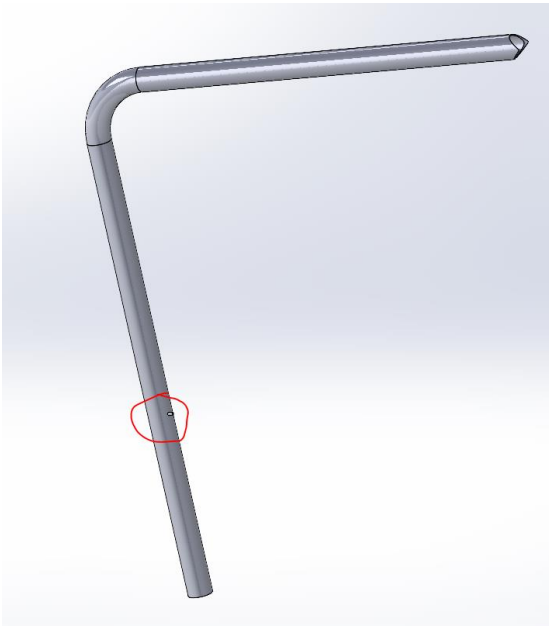
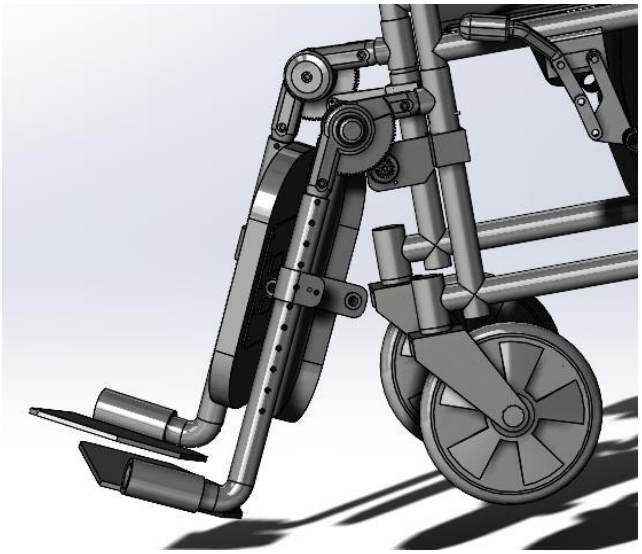


The trick of my design which can rotate the leg supports under the wheelchair is to adjust the position of the boss in the groove. The leg support is in its normal use when the boss is stuck in the back groove of the steering tube.



But when we lift the steering tube and leg support so that the boss is no longer stuck in the groove and rotate the steering tube and leg support so that the boss is stuck in the front groove, then we realize our goal to put the leg support under the wheelchair. The detailed SolidWorks file will be uploaded with the individual analysis.

We updated our design with more detailed improvements. The result is that we satisfy the requirement our client asks to put the leg support under the wheelchair. The leg supports don't always need to be disassembled and lead to possible loss of theft. This successful design is important for us to overcome other issues and create our final design based on the existing design.

Bibliography

[1] "grabcad community," [Online]. Available: https://grabcad.com/library/wheelchair-20.

[2] "Drive Lightweight Crusier III Wheelchair Review," [Online]. Available: https://www.youtube.com/watch?v=LhcWVosyW34.