

Secondary mobility device for airline travel

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Will Fox, Grant Karlsson Eliffson, Jonathan Evans, Desiree Fluoro

Background

Air travel is an essential aspect of modern human life. It is needed for both business and personal ventures. However, for disabled persons who rely on a wheelchair for mobility, it can be restricting, and these individuals often fear air travel. Currently, prior to flight, disabled persons must be removed from their primary wheelchair and transferred to an airline aisle chair in an embarrassing and often dangerous process.

Problem and Existing Problems

There are many models of aisle wheelchairs currently on the market, however they are expensive, bulky, and non collapsible. Being uncollapsible forces the chair to be put in cargo, causing more hassle and time for the person using the device as well as others helping them. One option on the market currently is a self-propelled wheelchair that has the ability to convert into an aisle chair. However, no models currently on the market address the issue of transferring disabled passengers between wheelchairs. These transfers take time, can lead to drops, and are embarrassing.

Design

We have designed a secondary wheelchair with the intent to alleviate transfer problems. The design is composed of a low-carbon steel frame. The legs and backrest are attached to the base using stainless steel folding arms, allowing the entire device to collapse to a height of approximately three inches. Seat cushions were custom fabricated for the device to provide low friction to the user to simplify getting on and off the device. Each seat cushion is removable from the steel frame for simplified storage and to aid in collapsibility. Additional features including foot rests and a seat belt were added to improve comfort and safety of the device.

Prototype Testing

A final test of our design will consist of our client testing the viability of our design through traveling with our secondary device. This will allow us to receive direct feedback from our client and airline workers regarding the pros and cons of our device. Along with a travel test, we will be using the BIFMA chair standards test. These tests seek to ensure a chair is stable in all directions and will provide safe use.

Marketability

This device, with further testing and development, could have a significant impact on the flying experience of disabled individuals. Airlines should be especially concerned with the problems currently faced by disabled passengers. In recent years, many of the largest airlines, including American, Delta, and Frontier, have been fined for passenger rights violations. These fines have been substantial, sometimes being in excess of two million dollars. The use of our device would not only increase the autonomy of wheelchair-bound individuals, but would also hopefully decrease the number of complaints and lawsuits filed by these disabled passengers against airlines. Because of the advantages this design has over existing designs it is feasible that both airlines and disabled individuals would be interested in purchasing our product.