



# AGN Walker Brake System

Gabrielle Kistner, Anna Hempowicz, Nadine Ghosn, and Zheng Li (Advisor)  
University of Bridgeport  
Mechanical Engineering Senior Design Project

## ABSTRACT

The purpose of this project is to update the brake system for four-wheeled walkers. This innovative idea is in development to improve the friction force between the wheel and the brake. In doing so, the quality of the braking system will be improved based on material comparison. A new brake pad holder was designed.

## INTRODUCTION

Low-priced four-wheeled walkers on the market have flimsy braking systems, ill-equipped to brake efficiently. The scope of our project is focused on improving the portion of the braking mechanism at the wheel to improve the overall braking system. The wheel is made of polypropylene and the metal tooth-like comb which presses against the wheel to enact braking is made of steel. This can be improved by introducing different materials with higher coefficient of frictions in the braking mechanism at the wheel.

## PROPOSED METHODOLOGY

Polypropylene and steel have low static (0.3) and lower dynamic (0.28) coefficient of frictions. Our aim is to improve the coefficient of friction by introducing different materials in the braking mechanism. The first way we plan to do this is by stretching a wheel cover over all four wheels. We also plan to re-engineer a 3D-printed piece to replace the steel tooth comb, within which a caliper brake pad will be easy to integrate. The caliper brake pad is made of a rubber material which has a higher coefficient of friction than steel. Hence, the high coefficient of friction will produce a better quality for the braking mechanism. Also to ensure even better results, a wheel cover has been proposed that is of a higher friction coefficient than polypropylene.

## FUTURE OF THE PROJECT

This is still an on going project, in the future we plan to use calculations and FEA to find load and stress of brake.

## WALKER BRAKE SYSTEM OLD VS.



Fig. 1: Original brake attached to walker

## WALKER BRAKE SYSTEM OLD VS. PROPOSED 2

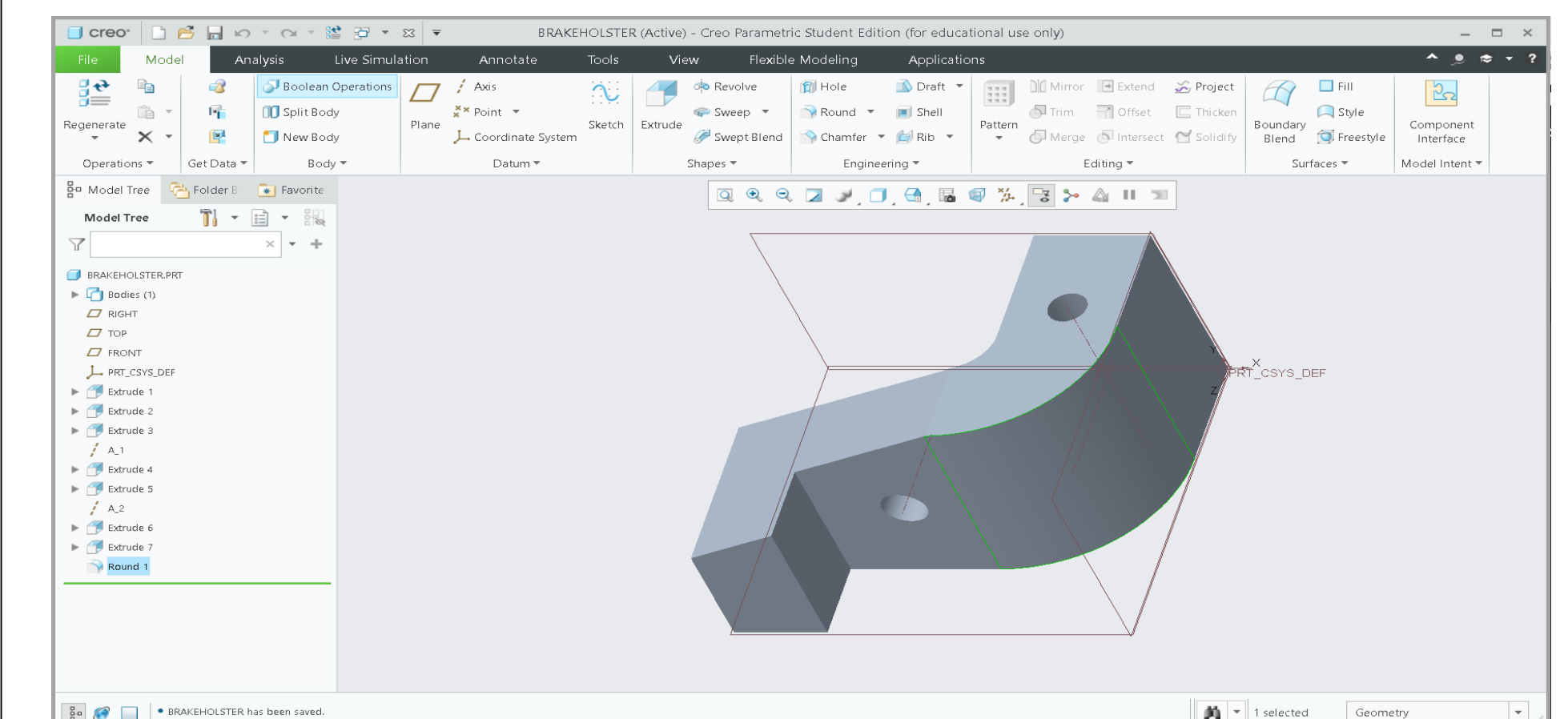
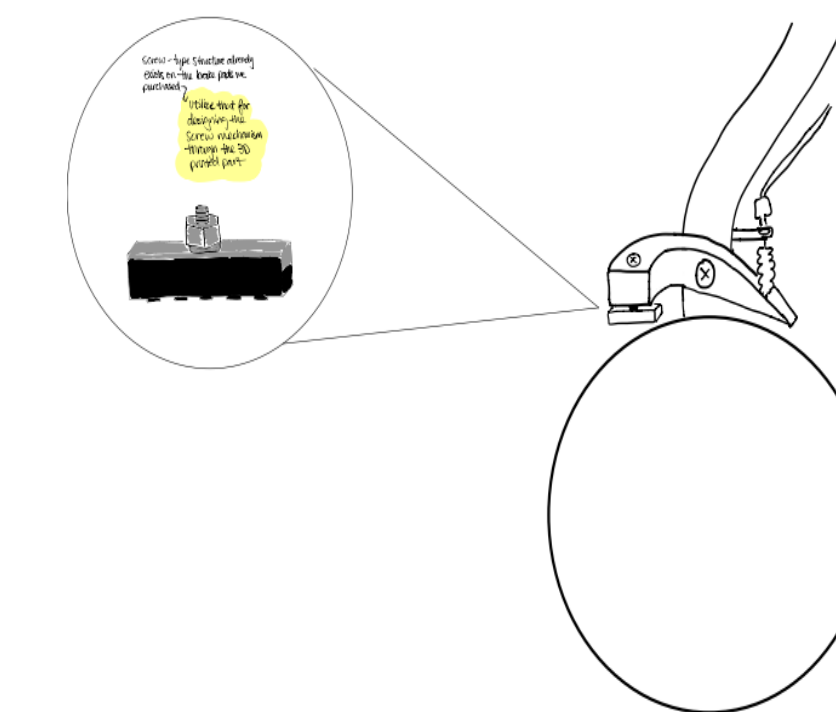


Fig. 2: Proposed Brake

## REFERENCES

[1] *Typical Engineering Properties of Polypropylene* [PDF]. (n.d.). La Porte: IENOS Olefins and Polymers USA.