

A local businessman had the idea to build a device that allows a bicycle to tow another bicycle. He built a prototype to demonstrate his idea but he wanted help in developing a product that could fit more bikes, did not require a rear rack to operate, and be manufacturable at his facility. He also expressed interest in an economic evaluation of production and marketing of the device. An analysis of customer needs led to adding reduction of weight and ease of attachment to the design requirements.

This report is about improving the original design and presents the process of developing a working prototype that provides significant improvement to the original design. It discusses research regarding patents of similar products, bike frame strength, reliability and failure testing, and manufacturing methods. The design of each prototype is modeled in Solidworks and an analysis is performed with its built-in simulation software.

The project resulted in a working prototype that allows a bicycle to tow another bicycle. The device requires no tools for installment. It uses wing head bolts to attach at the rear wheel hub, and a p-clamp to attach to the seatpost of the towing bike. The towed bike's front wheel sits on a bar with hooked ends and the top of the wheel is tied to the device. It doesn't require a luggage rack on the towing bike.

We also included a description of the manufacturing methods and processing required to manufacture this device. The cost of the final design consists of material and labor costs. A facility layout is discussed with regard to production capacity.