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Human Powered Golf Cart



Summary

Golf is a favorite sport of many people. Looking into a way the golfing experience could be improved was the focus for this design project. One of the problems regarding the game of golf is how people get around the golf course. The current methods include renting a gas or electric golf cart, renting or purchasing a pull cart for walking or the basic walk and carry method. Walking is sometimes too much work especially in the heat of the summer when a player is carrying their clubs. Certain people also are not able to walk an entire round of golf due to age or physical limitations. Driving a golf cart, however, takes away the small amount of physical exercise one gets from playing a round of golf. The idea was to present a solution to this problem by coming up with a way to easily get around the golf course while still getting exercise. The solution developed was to create a golf cart that was powered by pedaling.

There are models on the market which offer a golf cart that you can pedal but also provides you with an electric or gas motor to help if you get too tired. Like most golf carts available on the market these too are very expensive. There are also three and four wheel cycles on the market but none of these models offer a place to put golf clubs and again they are expensive. Also, many of these are made for more than one person. The design for this project was intended for a single rider. This would keep the size of the vehicle down as well as making it easier on the golf course. It would remove the need to drive back and forth each player's golf ball.

Researching this problem and a solution started providing requirements for the design. The most important need was providing a solution at a low cost as many options available on the market sell in the range of a couple hundred to a couple thousand dollars. The cart also needed to be attractive, comfortable, easy to use, and safe. A gearing system was needed that would make it easy to pedal along with quality brakes and steering mechanism. The concepts that were considered used parts from an existing bicycle. Some of the early concepts included widening the rear of a bicycle for a place to store to golf clubs, attaching two bicycles together to create the four wheel cart and attaching a way to hold the golf clubs to the side of an existing bicycle.

The concept that was looked into most in depth was a four wheel model with a section of a bicycle mounted in the center. This concept however included a complicated steering and braking system. A fellow student suggested building it off an existing go-kart. A go-kart was found and acquired that could be used for parts such as the steering assembly as well as the brake system, rear axle, wheels and tires. This was a large cost initially but saved a lot of design and fabrication time. This concept originally consisted of the existing metal frame on the go-kart. This was changed to instead building a PVC frame and only using the steering assembly from the go-kart. This made it easier to construct the frame but reduced the strength. Using the existing metal frame may have turned out to be a better choice. Instead the PVC frame that was built was reinforced with aluminum angle riveted to the PVC piping.

The final design includes the PVC pipe, reinforced frame with the steering, brakes, wheels and tires from the go-kart. The bicycle section was removed and mounted on the frame. The original gearing of the bicycle was utilized and an additional gear was added to the rear freewheel mechanism of the bicycle. This allowed the rear axle to freely rotate while not spinning the pedals. The chain on this added gear was attached to a drive gear on the rear axle that was mounted with two set screws to drive the rear wheels. The tires from the go-kart were used because they were similar to the tires used on golf cart. They are wide enough to not damage the grass on the golf course and have good traction. A PVC frame was built along with bungee cords to hold the golf clubs and there is a basket to hold additional items needed on the course.